LONDON GUARANTEE BUILDING
Michigan Avenue at Wacker Drive
THE HOME OF
finish

MONTHLY TRADE PUBLICATION
Established January, 1944
Published by
DANA CHASE PUBLICATIONS
360 North Michigan Avenue
Chicago 1
Telephone CEntral 6-1229

A trade publication devoted to the interests of the manufacturers of major home appliances and allied metal products. Covers plant facilities and manufacturing problems from raw metal to finished product, with special emphasis on metal finishing.

Free controlled circulation to management, purchasing, engineering and key plant personnel in companies intimately connected with the field covered. To others, subscription price $3.00 per year. Foreign subscription price (U.S. funds) $5.00 per year.

Editor and publisher, DANA CHASE. Associate editors, PROF. A. I. ANDREWS, PROF. R. M. KING, and MATT E. HEUERTZ.

Acceptance under the act of June 5, 1934, at Aurora, Illinois, authorized January 7, 1948.

COPYRIGHT 1949
DANA CHASE PUBLICATIONS
PRINTED IN U.S.A.

JUNE · 1949
Vol. 6 • No. 6

finish

FROM RAW METAL TO FINISHED PRODUCT

Rotospraying...

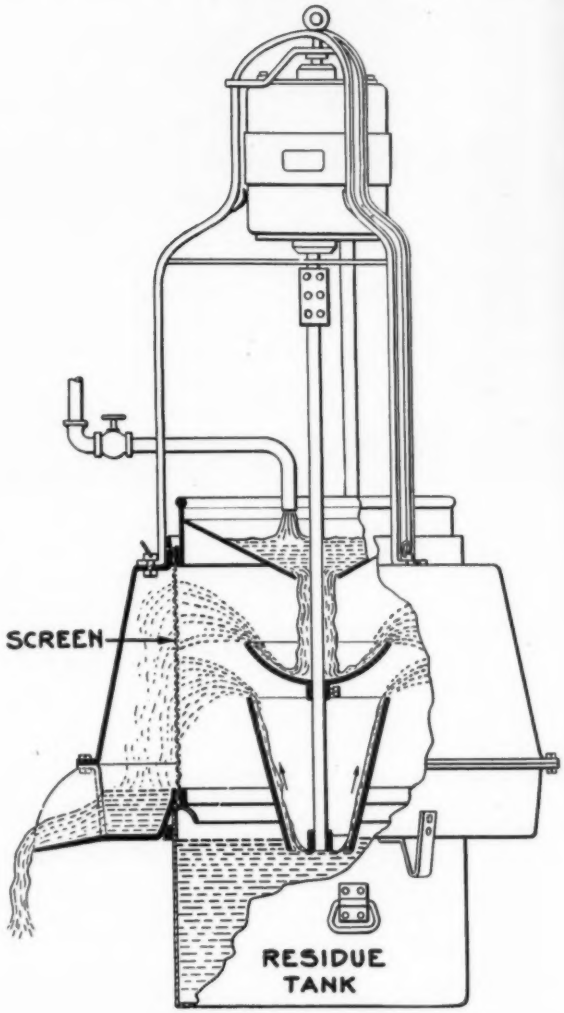
The STANDARD at Ingersoll-Steel
STANDARD for the enameling industry

Rotospraying is the standard method of sieving porcelain enamel slip in the plant of Ingersoll-Steel Division, Borg-Warner Corporation, Chicago, Illinois. In this company's modern porcelain enameling plant, three Rotosprays are on hand at all times to assist in the proper cleaning of the milled enamel, to insure against contamination and to help in the production of the finest quality porcelain enamel finishes for adding beauty and permanence to the company's products.

Hundreds of Rotosprays are on guard throughout the porcelain enameling industry for the proper cleaning of milled enamel. They represent "must" equipment for the modern enameling plant — they are STANDARD for the enameling industry.

The first Rotosprays built for service in enameling plants are still in daily use and in most instances they have been joined by "big" or "little brother" Rotosprays as a result of the effective job done by the first ones put in use. If you aren't Rotospraying in your plant, you are not using the system recognized as STANDARD.

Check your plant today and make sure that you have the correct number and correct size of Rotospray units to properly prepare your enamel slip at lowest possible cost. Then check with us or with any authorized representative.



Registered Patents:
U. S. Pat. No. 1769586; U. S. Pat. No. 1769587; Great Britain Pat. No. 289847; German Pat. Ser. No. 71149-28; French Pat. No. 650190.

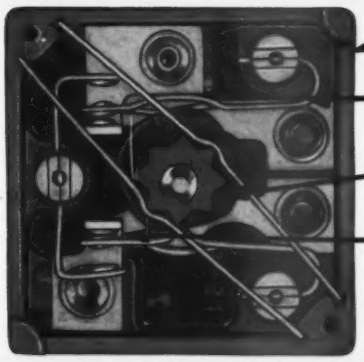
ROTOSPRAYS ARE ALSO USED EFFECTIVELY IN CHEMICAL PLANTS, PAPER MILLS, AND POTTERIES

ROTOSPRAY
Reg. U. S. Pat. Off.)

Sales representatives —
B. F. DRAKENFELD & CO., INC., New York, N.Y.
PEMCO CORPORATION, Baltimore, Md.
O. HOMMEL COMPANY, Pittsburgh, Pa.
FERRO ENAMEL CORP., Cleveland, Ohio and foreign offices
CHICAGO VITREOUS ENAMEL PRODUCT CO., Cicero, Ill.
BRAUN CORPORATION, Los Angeles, Cal.
BRAUN KNECHT & HEIMANN CO., San Francisco, Cal.

Foreign representatives —
WATFORD ENGINEERING WORKS, Watford, England
ELOF HANSSON, Gothenburg, Sweden

ROTOSPRAY MANUFACTURING COMPANY
562 WASHINGTON BOULEVARD • CHICAGO 6, ILLINOIS • TEL. DEarborn 2-7196



Compact—only 1¾" square. Permits smallest cluster.

Phosphor Bronze Springs maintain proper tension permanently.

Cam is made of tough, long-wearing plastic, molded to steel shaft.

Large Silver Contacts insure better conductivity.

Recessed Terminals protect against shorting.

One-Piece Molded Bakelite Case; strong, durable.

Available in a choice of 3 shaft styles; 5 shaft lengths for easy adaptation.

Now... a new TK SWITCH

with 7 Heats... 7 Outstanding Advantages

● Here at last is a new, practical 7-heat switch—a smaller and more compact unit than most present switches. The small size, only 1¾" square and 15/16" deep, permits better grouping— *the smallest cluster of any switch on the market!*

Note in the photos above the complete elimination of exposed terminals; they are recessed in the back of the case for added safety, making shorts practically impossible. All materials and workmanship are of the usual TK high quality . . . phosphor-bronze springs and silver contacts insure lasting dependability.

This new TK 7-Heat switch can add new selling features to your electric ranges. 7 heats give Mrs. Range Buyer a closer and more flexible control over heat—cooking is made easier. Adaptation to your ranges can be made quickly, without disrupting production. Write for complete details on this newest development in electric cooking! (5-Heat switches are also available in this new, compact design.)

TUTTLE & KIFT, Inc.

1823 N. MONITOR AVE. • CHICAGO 39, ILL.

A Subsidiary of Ferro Enamel Corporation

Time-Proved for Economy

SOUND research, in-the-plant testing and laboratory checking at every phase of production *time-proves* all Century Frits. Each type of frit, whether for ground or cover coat, is checked in this manner to insure you complete satisfaction. Century's plant and laboratory experts take pride in their record of producing fine, time-proved frits for over 20 years.

This constant alertness means profits for you in fast, economical enameling operations . . . profits resulting from speed, fewer rejects, and neater overall appearance. You'll find it will pay to check Century frit in your plant. Write for a trial run today.

Enameling Job Orders

We have additional space in our plant at present for large or small job orders. Write or phone us today for complete information.

CENTURY VITREOUS ENAMEL CO.,
6641-61 S. Narragansett Ave., Chicago 38, Ill.

FRIT from CENTURY
FRIT MASTERS

5 FEATURES distinguish the new Binks

GRAVITY FEED SPRAY GUN

(Model 7VF, for ceramics)

Binks Model 7VF Gravity Feed Spray Gun makes it possible to spray fast settling materials, such as porcelain enamel, without the use of special agitators. The gravity feed quart cup is easy to fill and to clean. The lid clamps on quickly and securely. A brief shake of the gun is sufficient to keep the contents of the cup in agitation.

This gun and cup set-up is ideal for use in the laboratory or testing department where small batches of finish are used to test the spraying characteristics, coverage and other qualities of a frit formula.

The Model 7VF is also perfect for touch-up and patching work beyond the reach of regular spray guns and mechanically agitated tanks.

With the exception of its efficient gravity feed system, the Model 7VF gun is the same as the standard Binks Model 7V spray gun used widely in regular production finishing throughout the ceramic industry. Because of this the spraying performance obtained in the laboratory is certain to be duplicated in the shop when a new formula is put into production.

1. Model 7VF gun is built around the 7V gun, which is accepted as standard by porcelain finishers everywhere.

2. This illustration doesn't show the harder-than-diamond tungsten-carbide inserts in material nozzle and needle tip, but they're there to minimize erosion from abrasive frit.

3. Convenience of the new Binks quick-detachable hose coupling. A simple twist of the wrist disconnects the gun and shuts off the air automatically; turns it on when connection is re-established.

4. Swivel-mounted one-quart cup can be turned in any direction for convenient balance or position with relation to the gun.

5. Snap-on watertight cover adds to operating convenience . . . won't leak or spill when shaken for agitation of fast-settling material.

"Progress is just improving an old idea or inventing a new one." J. G. Roche

Chairman of the Board

Binks MANUFACTURING COMPANY

3122-40 Carroll Ave., Chicago 12, Ill.

NEW YORK DETROIT LOS ANGELES ATLANTA BOSTON CLEVELAND DALLAS MILWAUKEE NASHVILLE PHILADELPHIA PITTSBURGH ST. LOUIS SAN FRANCISCO SEATTLE WINDSOR, ONTARIO, CANADA

Send now . . .

. . . for your free copy of our new Catalog-Data Book. Please request your copy on your company letterhead.

Four-Way Savings with NEW Non-Spalling Light-Weight FERRO ENAMEL Burning Tools

1 LOWER FUEL COSTS

2 INCREASED FURNACE PRODUCTION

3 FEWER REJECTS

4 FEWER TOOL REPLACEMENTS

An all-Inconel burning tool to support washing machine tubs. Weighing only 12 pounds, the tool is much lighter than previously used fixtures. The fixture is reversible to accommodate two tub sizes. Fabricated by Ferro Enamel Corporation, Cleveland, Ohio.

Fabricating an Inconel Burning tool at the plant of Ferro Enamel Corp., Cleveland, Ohio. The welds, made with Inconel welding electrodes, are heat-resistant and corrosion-resistant.

THESE new Inconel burning tools are lighter and less bulky. They help decrease your fuel costs and increase your furnace production. That's obvious.

Burning tools of Inconel are also highly resistant to spalling . . . offer great protection for costly finishes.

Through Ferro Enamel Corporation, Cleveland, Ohio, these savings with Inconel burning tools are available to enamelers throughout the country.

For example . . . by welding Inconel sheet, Ferro Enamel fabricated washing machine tub burning tools that weigh only 8 to 12 pounds—*12 pounds less than the tools formerly used by the washing machine industry.*

In one furnace alone, these lighter tools save $127.68 in fuel costs per week. And not only that . . . because of the less bulky construction of this Ferro Enamel design, some plants are able to double-deck their tubs through the furnaces . . . *thus gaining 100% increase in furnace capacity.*

Best of all, your maintenance costs are lower, tool replacements fewer. This is because tough, temperature-resistant Inconel equipment gives thousands of trouble-free service hours at temperatures as high as 2000°F.

For further information about fabricated Inconel burning tools, write Ferro Enamel Corporation, Cleveland 5, Ohio.

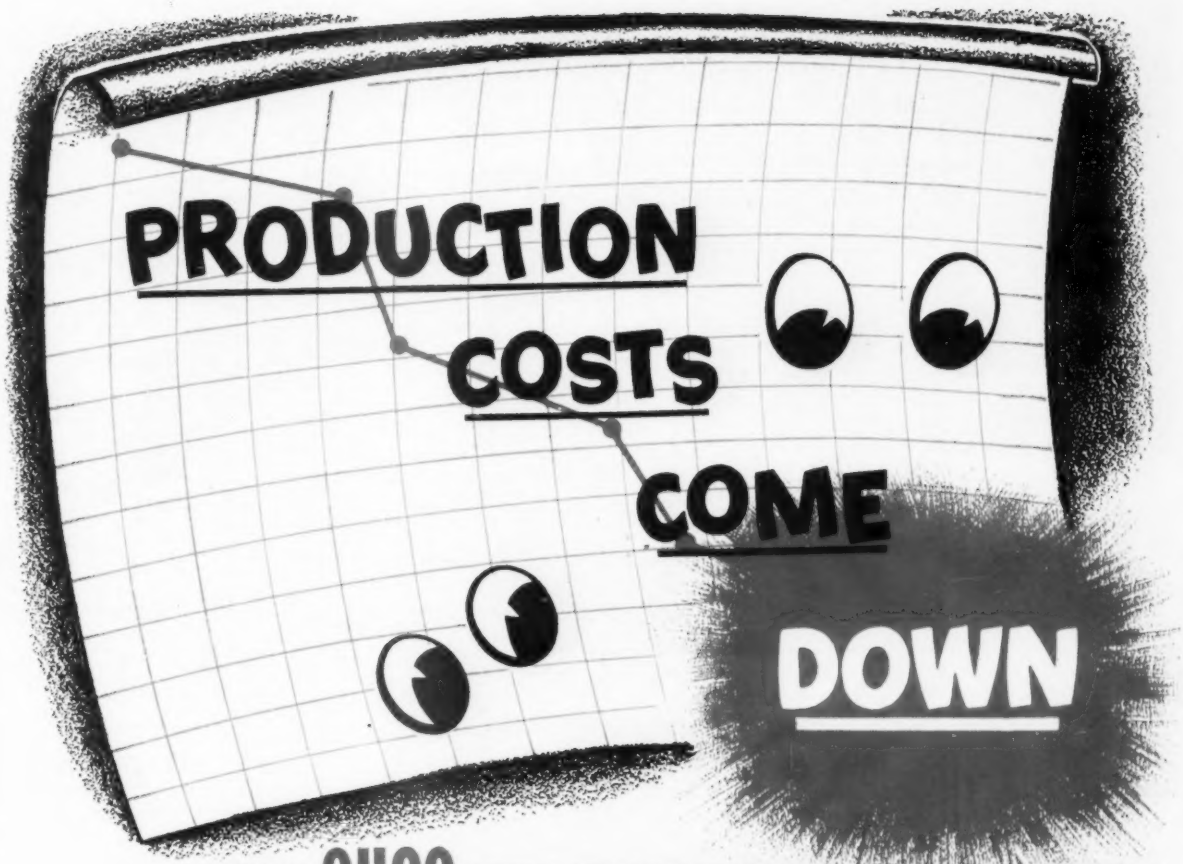
*Reg. U. S. Pat. Off.

And remember . . . Inco's Technical Service Department is always ready to help you solve your metal or fabrication problems.

EMBLEM OF SERVICE INCO TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

INCONEL*. . . for long life at high temperatures



—WHEN OHCO CERAMIC PRODUCTS WORK FOR YOU!

Production costs are sometimes hard to control. They go up . . . they go down — and not always when you expect them.

Here's one sound recommendation to follow to reduce production costs . . . *let OHCO ceramic products work for you* . . . they're proven production cost-cutters!

Hommel enamels follow a definite process of production in our plant — a pattern that has been designed to assure a product that satisfies all demands. Besides giving you a finish that is not affected by thermal shock, mechanical shock, scratching, freezing temperatures or acid, Hommel's enamels are *made* to fit into an uninterrupted production set-up . . . none of those costly production delays with Hommel's enamels! Hommel's ground coats, zirconium cover coats, and Tite-Wite frits cover the complete firing range from 1250°F. to 1600°F.

Insure profitable plant operation with OHCO supplies . . . call a Hommel Engineer for complete sound engineering advice. No obligation. Write or Wire today.

Laboratory Controlled Production of Ceramic Supplies

- FRIT for Steel, Cast Iron or Pottery
- CERAMIC COLORS
- CHEMICALS
- BRONZE POWDERS
- METAL POWDERS
- SUPPLIES
- EQUIPMENT

Our Technical Staff and Samples are available to you without obligation. Let us help you with your problems.

THE O. HOMMEL CO.
PITTSBURGH 30, PA.
Pacific Coast Agents
L. H. BUTCHER CO.

World's Most Complete Ceramic Supplier

Vitreo goes cruising

Plan... for the Lifetime Finish

with an all-weather canned heat... PORCELAIN ENAMELED STOVE

STERNO, INC. finds a ready market for this VITREO porcelain enameled galley stove. It cooks a medium size meal quickly and safely. The intensifiers give various degrees of heat for fast or slow cooking.

Sterno Canned Heat, used in this stove, is non-spillable, will not melt, is economical to use, and can be extinguished and relit until can contents are consumed.

For many years we have formed, enameled and assembled these stoves. The permanent vitreous finish prevents rusting and permits easy cleaning.

We can offer the same type of manufacturing and assembly service to other manufacturers.

After we have done what assembly work you require, we can arrange to ship direct to your customers.

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

REPORTS FROM THE FIELD

Many Porcelain Enamelers Prefer

TREOPAX Z
TREOPAX S
TREOPAX
for

Color Stability
Scratch Resistance
Opacity
Enamel Working Properties

The experience of users is a good yardstick for determining the worth of a product. Our Field Engineers report the following summarized statements from Superintendents in the Porcelain Enamel Industry:

TREOPAX Z "Very pleased with results...standardizing 100% on Z."

TREOPAX S "Doing a beautiful job on table tops and sinks."

TREOPAX Z "All white now being opacified with Z."

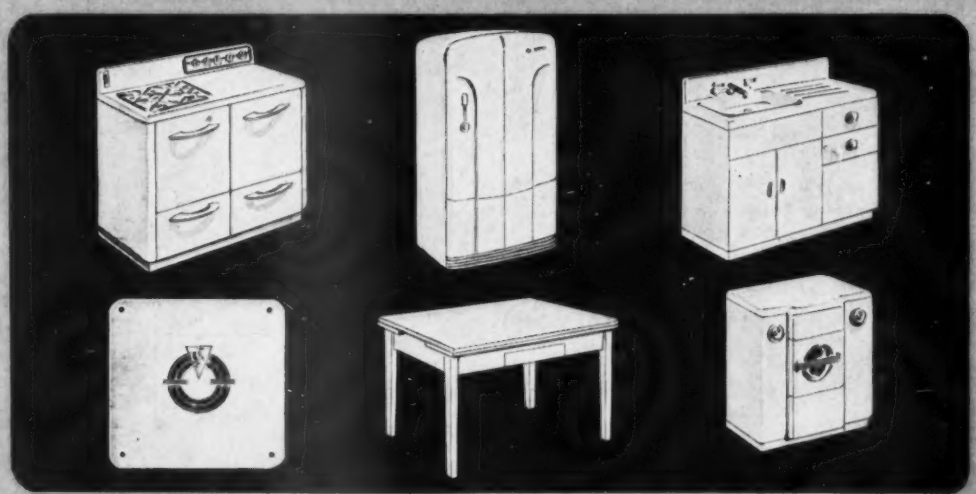
TREOPAX "Rates as the best opacifier made."

TREOPAX Z "Our standard opacifier in steel enamel."

TREOPAX Z "Giving excellent results in zircon enamel."

TREOPAX "Use being continued in cast iron and antimony AR."

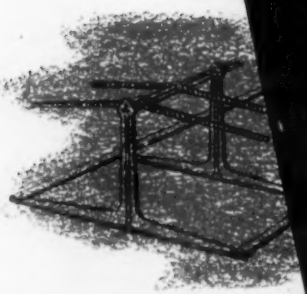
Our field engineers are well equipped to discuss your problems. They can support their recommendations by laboratory data and by practical experience with shop conditions.



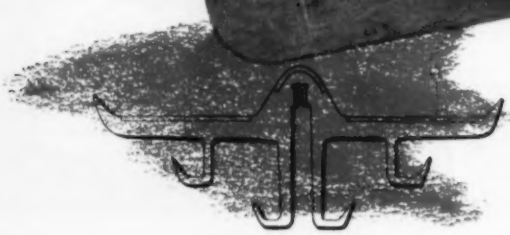
TAM

TITANIUM ALLOY MFG. DIVISION
NATIONAL LEAD COMPANY
Executive and Sales Offices: 111 BROADWAY, NEW YORK, N. Y. • General Offices and Works: NIAGARA FALLS, N. Y.

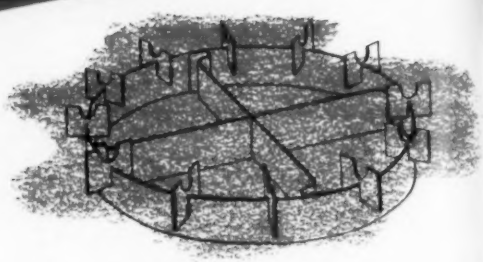
You'll run better Ware



Box Furnace Hanging Rack



Six-Point Coat Hanger



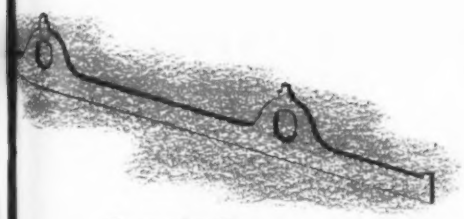
Rolled Alloy Tub-Burning Ring

A Dependable Guide to Better Porcelain Enameling

FERRO *WILL DESIGN MODERN BURNING TOOLS OF HEAT-RESISTING CAST AND ROLLED ALLOY CONSTRUCTION:* **COAT HANGERS • TUB-BURNING RINGS • SUSPENSION BARS • HANGING RACKS • HOLLOWARE ASSEMBLIES • UNIT RANGE BODY SUPPORTS**

Reduce Operating Costs

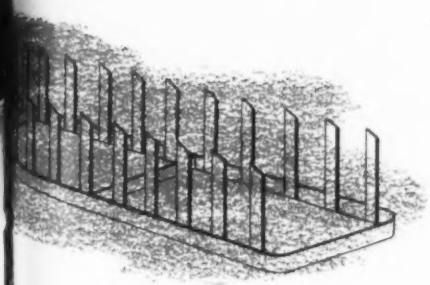
with MODERN BURNING TOOLS



Suspension Bar

Standardize on firing *with tools designed for your specific burning application—with the correct weight ratio—with the proper analysis,* and you will immediately increase your production of higher quality ware. At the same time, cost of finishing will be reduced because failures due to spalling are held to an absolute minimum when burning tools are designed with an analysis that resists oxidation at *peak* operating temperatures.

Ferro, with 25 years' experience in designing long-lasting tools for high-temperature finishing operations, will be glad to survey your burning tool setup and make recommendations of a practical nature, that will increase your production of better finished ware. Savings in loading and unloading your line—in labor costs—increased life of alloy and reduced fuel consumption are a few of the other dividends a burning tool checkup can provide. Write us for further information about this Ferro service or request a Ferro representative to call the next time he is in your territory.



Rolled Alloy Point Loop Rack

Remember! **Modern FERRO Burning Tools Will Provide These Advantages:**

1. Increase Life of Alloy
2. Reduce Labor Costs
3. Reduce Ware Damage
4. Reduce Fuel Consumption
5. Speed-up Loading and Unloading Your Line
6. Result in Better Finished Ware at the Lowest Possible Firing Cost

FERRO ENAMEL CORPORATION
4150 East 56th Street • Cleveland 5, Ohio

FERRO

"HIGH TEMPERATURE QUALITY"

from "low temperature" enamel frits and non-premium steels

Send for FREE pamphlet . . . No obligation

Here's a simple, inexpensive way to get all the benefits of lower burning temperatures while retaining all the quality of hard enamels. And even those enamels already in the category of "low temperature" can be substantially improved. Merely add small quantities of Ceramic Lithium compounds to the *mill.*

Developed especially for the industry by Metalloy, Ceramic Lithium compounds are powerful fluxes. Extensive plant tests and production runs prove that small additions of these compounds reduce firing temperatures from 30° to 60°F., depending upon individual plant conditions.

Besides saving fuel, these lowered burning temperatures permit the use of non-premium steels by eliminating warpage. Firing times, too, are reduced to boost plant output. And, in some cases, acid resistance is improved even at lowered firing temperatures and shortened firing times. Other advantages noted are improved color stability and reflectance.

For ground coats: Lithium Titanate-B or Lithium Manganite. For cover coats: (regardless of type): Lithium Titanate-A or Lithium Zirconium Silicate.

By investing 3c and mailing the coupon below, you can obtain information on the latest developments using Lithium in ceramics. This information is the result of research by some of the nation's leading ceramic engineers.

As originators of Ceramic Lithium Compounds, Metalloy takes an active interest in new discoveries in the ceramic field. And by constant collaboration with ceramic engineers and close cooperation with production engineers, Metalloy strives to live up to its title: LITHIUM HEADQUARTERS

Other Ceramic Lithium Compounds
Offering Great Promise:

- Lithium Aluminate ($Li\ Al\ O_2$)
- Lithium Cobaltite ($Li\ Co\ O_2$)
- Lithium Manganite ($Li_2\ Mn\ O_3$)
- Lithium Molybdate ($Li_2\ Mo\ O_4$)
- Lithium Zirconate ($Li_2\ Zr\ O_3$)
- Lithium Metaborate Dihydrate ($Li\ BO_2\ 2H_2O$)
- Lithium Carbonate ($Li_2\ CO_3$)
- Lithium Fluoride (Li F)

METALLOY CORPORATION
RAND TOWER MINNEAPOLIS, MINN.
Division LITHIUM CORPORATION OF AMERICA, INC.

METALLOY CORPORATION, Rand Tower, Minneapolis 2, Minn.

Gentlemen:

Please send me basic information on Ceramic Lithium Compounds for ☐ Ground Coats ☐ Cover Coats

Name..... Title.....

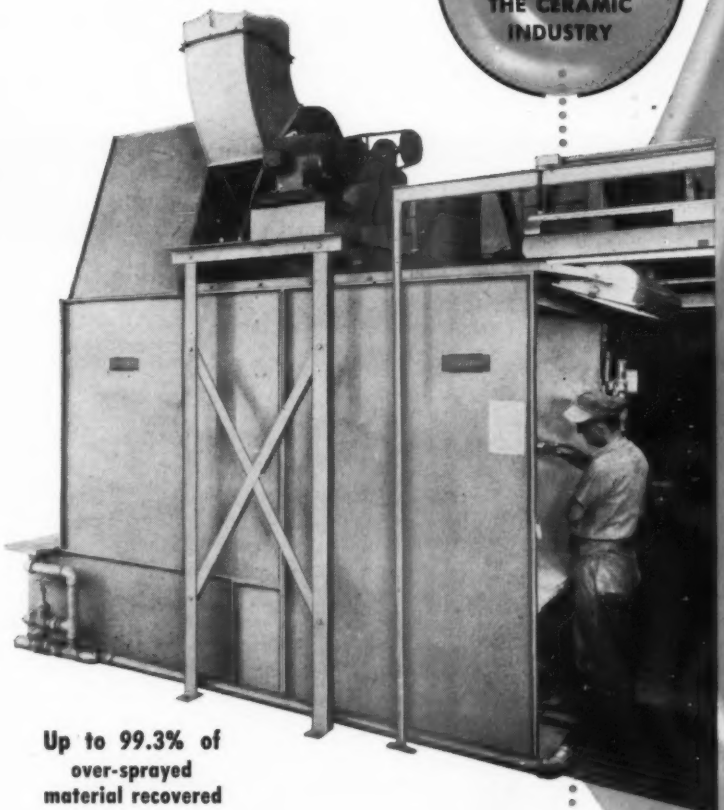
Company..... Address.....

City..... Zone.... State.....

THIS CENTRIFUGAL WATER-WASH SPRAY BOOTH

Saves its Cost in Several Ways

SPECIALLY DESIGNED AND BUILT FOR THE CERAMIC INDUSTRY



Up to 99.3% of over-sprayed material recovered

Here is a spray booth so simple, efficient and economical *it actually pays for itself*. Not only does it recover up to 99.3% of over-sprayed solids—but substantial savings are effected because maintenance is negligible.

Only one moving part . . . the blower . . . does all the work. Its bearings are outside the exhaust duct to escape all abrasive wear. There are No Nozzles, No Pumps, No Piping—nothing to wear out or require replacement. Self-cleaning baffles make the removal and cleaning of eliminators unnecessary. The DeVilbiss Centrifugal Water Wash Spray Booth maintains a continuous exhaust efficiency never before equalled because static pressure always remains constant.

It will pay you to investigate the unusual features of this new DeVilbiss Centrifugal Water Wash Spray Booth. And it will pay you to talk to your DeVilbiss engineer if you want spray equipment specifically designed and made to handle ceramic materials.

THE DEVILBISS COMPANY • Toledo 1, Ohio
Canadian Plant: WINDSOR, ONTARIO

DE VILBISS

means **Quality** *in all four . .*

SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS

Colors leave you cold?

Don't scold!

Call on DRAKENFELD, your partner in solving color problems

It's tough to keep from "blowing your top" when faulty porcelain enamel colors create a costly reject problem. On the other hand, why not let Drakenfeld join you in your fight against the high cost of production? Whether you produce domestic, commercial, architectural or industrial porcelain enamel products, our skilled technologists will step in and help you attain the color best suited to your specific processing methods.

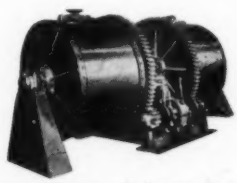
For many, many years, Drakenfeld has put its broad knowledge of production techniques and color research facilities to work solving the color problems for manufacturers of porcelain enamel products. We take every possible precaution in every phase of color formulation and production to deliver top-notch colors that fit your frits.

Let us discuss how our porcelain enamel color service can help you attain greater production, fewer rejects and a better profit. Phone or write for a meeting date to suit your convenience.

DEPENDABLE SERVICE ON: Oxide Colors . . . Screening Paste . . . Graining Colors . . . Squeegee Oils and Mediums . . . Rotospray Sifters . . . Steveco Grinding Mills . . . Porcelain Grinding Balls . . . Porcelain Mill Linings.

5 SAVINGS WITH STEVECO MILLS

Time
Labor
Horsepower
Floor Space
Initial Costs



Steveco high-efficiency duplex mills wet-grind porcelain enamel materials faster, better and at low cost. Many outstanding construction features proved in hard day-after-day service in many plants. Wide range of sizes and linings, with all types of drives. Write for catalog, then let us study your grinding needs and recommend the correct type for your requirements.

Rotospray — a millroom must!

The Rotospray helps you get properly prepared slip for the production line. Indispensable for "reconditioning" enamel slip. Equally valuable at ground coat dip tanks. Ideal for any job that requires speedy, positive sieving. Strains through a long-life vertical screen—no clogging. Standard and Junior sizes. Capacities range from 300 to 1,000 G.P.H., depending on nature and specific gravity of product, screen mesh and sifter size. Write for descriptive folder.

Drakenfeld

B. F. DRAKENFELD & CO., INC. • 45-47 Park Place, New York 7, N. Y.

Factory and Laboratories: Washington, Pa.

Pacific Coast Agents: Braun Corp., Los Angeles 21 . . . Braun-Knecht-Heimann Co., San Francisco 19

THE Finish Line

RAMBLINGS FROM THE EDITOR'S DESK – may, in this case, include brief points on a number of subjects.

At a recent meeting, A. L. Green, special representative, Freight Claim Division, Association of American Railroads, presented claim payment figures for all causes on four groups of commodities for the year 1948, with the percentage increase over the year 1947. These commodities included: (1) plumbers goods, (2) stoves, (3) enameled ware, including washing machines, washing machine tubs, and other enameled products, (4) refrigerators.

Note to refrigerator manufacturers

While all of the classifications on which Mr. Green reported showed sizeable gains in claim payment figures, it is interesting to note that refrigerators showed by far the greatest percentage gain of any of the four classifications reported. From the standpoints of the refrigerator manufacturer and those interested in porcelain enamel as a finish, it is equally interesting to note that all of the other three classifications include products that are finished *entirely in porcelain enamel.* On the other hand, to the best of our knowledge the exteriors of all household refrigerators *(the classification showing greatest percentage increase in damage claims)* were protected with some finish *other than porcelain enamel.*

This information should give food for thought to the refrigerator manufacturer who may have been telling his distributors or dealers that porcelain enamel presents a shipping hazard when used as an exterior coating.

The plain fact is that refrigerator manufacturers have been able to "get by" with finishes less durable than porcelain enamel during the recently deceased sellers' market. With the reinstatement of the present cautious buying, we may now expect to see these same manufacturers giving quick study to providing the exterior finish which is conceded to be the longest lasting, most durable, and most resistant to *all types* of damage and wear that can be used for refrigerator exteriors. As a matter of fact, a number of the manufacturers are way past the studying point, and we may fully expect to see the *all-porcelain refrigerator* again offered to careful buyers before many months have passed.

To executives and shipping men

It will also be of interest to producers of *all types* of products listed on this page to observe the future trends in claim payments. The National Safe Transit Program, which is initiated by *finish* and which is being coordinated under the sponsorship of the Porcelain Enamel Institute, is gaining wide acceptance among the producers of the products listed. *(See complete report on National Safe Transit Program in this issue.)*

While a program of such scope and importance as this national effort for the reduction of shipping losses obviously takes time for installation on an industry-wide basis, additional time before packaged products tested according to the Safe Transit procedure will be in the hands of carriers, and more time before an accurate comparison of losses can be made with comparative periods during which the program has not been in use, we believe it is safe to prophesy the end result.

As reported by individual manufacturers, there are proved results in the reduction of losses and, in addition, good possibilities for reduced packaging costs, if a satisfactory pre-testing program is instituted. As the number of manufacturers using this system of pre-testing increases, there seems little doubt that the total claim payment figures in the classification of the products covered will show a favorable trend when compared with previous periods. As any traffic man will tell us, there is, of course, a decided lag in accurate statistical information which will have to be taken into consideration, but this should in no way reduce the desirability or importance of the ultimate result.

You can't drive spikes with a tack hammer

As all *finish* readers know, our publication no longer confines its efforts to the porcelain enameling industry alone, but now covers the much broader field of major appliances and allied metal products editorially, taking the metal as it enters the plant, following it through fabrication, metal preparation, and finishing, and in some instances even further, as in the case of the National Safe Transit Program.

This editorial service has been added, however, and does not detract from our purpose of furthering the interests of porcelain enamel as a finish. This brings us to the point of the heading for this comment.

Too many sections of the porcelain enameling industry are, at present, attempting to "drive spikes with a tack hammer" insofar as educational and promotional campaigns are concerned. It is easy to point to individual sections of the industry, for instance, that are spending a very *few* thousands of dollars per year in selling their products and services on a national basis.

It is conceded by everyone that porcelain enamel, as a finish, has some of the most powerful competition that it would be possible to find. This competition is in the nature of special metals, plastics, organic finishes and others.

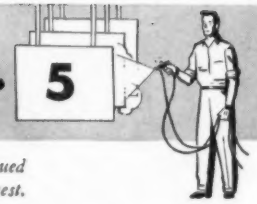
Porcelain enamel has inherent qualities that have been looked up to by practically every producer of competitive products. Nevertheless, in several instances competition has forced porcelain enamel out of markets due to more forceful advertising, promotion, and sales effort.

It is high time that the industry as a whole, or segments individually, take stock of this fact and make plans for promotional effort more nearly representative of the value of the markets to be held and markets to be gained.

Dana Chase

EDITOR AND PUBLISHER

Enameler's Data Sheet No. 5

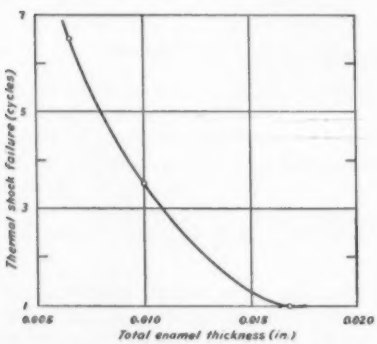


An informative series on titanium-bearing killed steel for the enameling industry. Issued monthly by Inland Steel Company. Reprints of all data sheets are available upon request.

TITANIUM STEEL PRODUCTS DEMONSTRATE GOOD THERMAL SHOCK CHARACTERISTICS

In the kitchenware and stove industries, particularly, it is extremely important that porcelain enameled products be able to withstand heating and thermal shock when in service.

The first of these conditions is encountered during normal use; the second, when cold water is run into a hot utensil. In either case, resulting expansion and contraction of the metal and enamel may cause crazing—the formation of a network pattern of fine cracks in the enamel surface. And, in extreme cases of thermal shock, chipping or "spalling" may result.



Relation between thickness of enamel coating and resistance to thermal shock.*

The resistance of an enameled steel to thermal shock depends upon the characteristics of the enamel itself as well as upon the physical properties of the enameled metal. For example, the thinner the enamel coat, the higher is its resistance to thermal shock. In addition, an enameled product made of a metal with a low coefficient of expansion will flex less during service and will, therefore, be less subject to crazing and chipping.

Thermal Shock Test Results

The effect of enamel thickness on thermal shock resistance can be seen from the accompanying curves. These curves, which were derived from tests conducted by Howe and Bolin*, indicate that, as enamel thickness increases, thermal shock resistance decreases. The tests consisted of the repeated evaporation of a small amount of ice water (50 cc) to dryness at temperatures from 350° to 500°. Each succeeding amount of water was added while the pan was still hot.

Crazing in service sometimes appears around the burner openings and over the flanges of electric stoves due to normal heating. Fellows** showed that enamel failure under these conditions is also partly dependent upon enamel thickness.

In tests of rim-bound specimens, it was found that enamel of .0175-in. thickness failed when input to the electric burner was 500 watts, .0125-in. enamel failed at 800 watts, and .008-in. enamel applied directly on iron required 1000 watts to produce failure.

Titanium Steel Resists Thermal Shock

Titanium enameling steel products have a high resistance to enamel failure from thermal shock and normal heating, both because of the metal's coefficient of expansion properties and because it can be finished with a very thin enamel coating. The latter is possible, as has been discussed in previous data sheets, because titanium steel eliminates the necessity for a cobalt-oxide ground coat. Frits have been developed which enable single cover coats as thin as .004 in. to be successfully applied *directly* to titanium steel. These finishes have satisfactory reflectance and hardness, high resistance to chipping, and are able to withstand thermal shock remarkably well.

Gas range burner bowls and electric range heater platforms fabricated from titanium enameling steel and finished with white acid-resistant enamels have been in production for two years. The performance of these parts in service has been highly satisfactory.

Other Advantages

Not only does titanium steel have good thermal shock characteristics and require only a single white cover coat but it also completely eliminates fish-scaling, and has a good resistance to hairlining, excellent drawing qualities, and a high resistance to sagging and warping.

Future Enameler's Data Sheets will further discuss the properties of Inland TI-NAMEL titanium enameling sheets.

Please write to us if you have any questions concerning the properties or application of TI-NAMEL, Inland's titanium-bearing killed steel.

**E. E. Howe and E. P. Bolin, "Resistance of Enamels to Thermal Shock," Jour. Amer. Ceram. Soc., 25 (15) 463-466 (1942).*

***Roger L. Fellows, "Crazing of Enamel on Stove Tops Due to Heating in Service," Jour. Amer. Ceram. Soc., 28 (10) 275-281 (1945).*

Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill.

SALES OFFICES: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul

OTHER PRODUCTS: Bars • Sheets • Strip • Structurals Plates • Tin Plate • Floor Plate • Piling • Reinforcing Bars Rails • Track Accessories

INLAND STEEL

INLAND TI-NAMEL

Reg. U. S. Pat. Off.

TITANIUM-BEARING KILLED STEEL ENAMELING SHEETS

Fabrication, metal preparation, enameling —sinks, bathtubs and washing machine tubs

a description of plant routine and a photo story of sink and bathtub production

(see July issue for photo story of washing machine tub production)

By Frank Osborne • DIVISION MANAGER, INGERSOLL-STEEL DIVISION, BORG-WARNER CORP., CHICAGO, ILL., AS TOLD TO *Matt E. Heuertz*

Exclusive porcelain finish

Located in the West Pullman district of Chicago's industrial area is the Ingersoll-Steel plant, one of the six manufacturing units in the Ingersoll Group of Borg-Warner Corporation. Here at Ingersoll-Steel, a variety of products are manufactured, ranging from "Venetian blind" window screens, and agricultural flat and formed discs, to bathtubs, sinks, and washing machine tubs.

Recently we completed the remodeling and enlarging of our enameling department for the mass production of porcelain enameled home appliances. Between the old 80′ x 200′ enameling department and the 160′ x 220′ fabrication department is a 96′ x 220′ addition to the enameling set-up. Whereas we formerly had two continuous furnaces, we now have four such furnaces, including two double deck furnaces. A box-type furnace, used prior to the revamping of our entire enameling procedure, is still being used in the old enameling department. Altogether there are more than 3600 feet of conveyors in our present enameling plant.

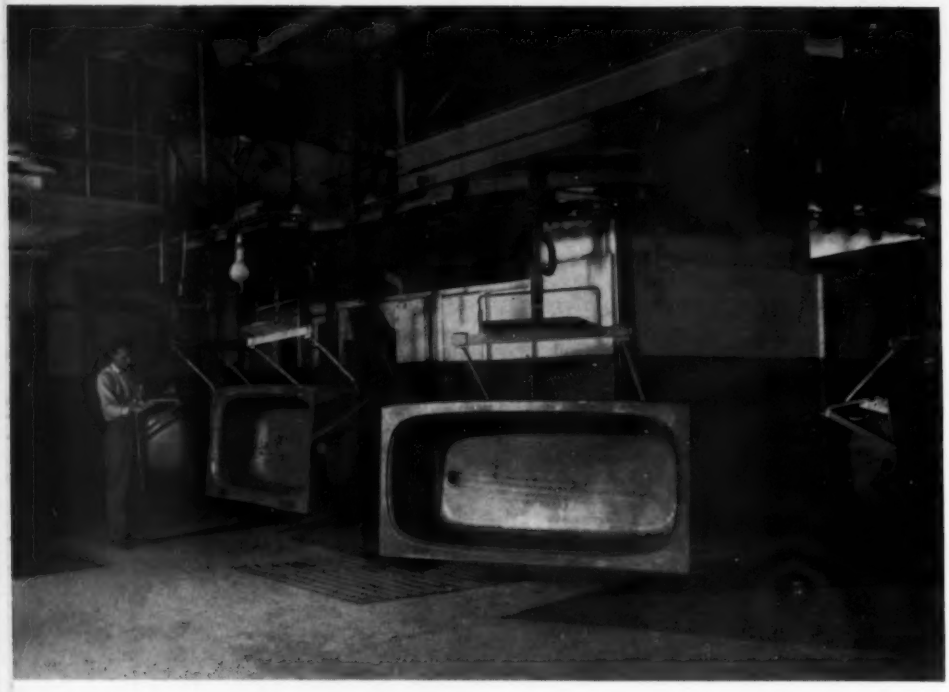
Washing machine tub fabrication

Enameling sheets are taken from storage and dipped in a dry type drawing compound before they are taken to one of the three washing machine tub press lines. In a three-die press, the first operation is for the first draw of the tub, second operation for the redraw, and the third for forming the tub bottom. The tub is then taken to a two-die press which pinch trims and pierces the agitator and drain holes. After the tub goes through a water wash to clean off the drawing compound, it is annealed with a gas flame at a temperature of 1600° F.

In a neck roll machine, the tub's top edge is curved and shaped. Another press operation pierces the wringer hole, followed in close order by the first Yoder roll to invert the flange, and the second Yoder roll to

Initial step in fabrication of bathtubs is the first draw of the tub in this 1900-ton double-action press. Two operators load, two unload.

finishfoto



Left: As sanitary ware leaves lower deck of pickle dryer, on right in photo, it is inspected at entrance to ground coat spray room.

finishfoto

Left below: Last operation on press line is piercing the tub overflow opening on this horn press. Tub is then ready for welding department.

finishfoto

Below: Hanger brackets for porcelain enameling are arc welded to the frame of the tub, providing vertical hanging in furnace.

finishfoto

curl the flange under. Burrs are ground off the tub before it is placed on a monorail conveyor which passes through a power spray washer.

Fabrication of sanitary ware

For bathtubs, 59″ x 72″ enameling sheets, pickled at the mill, are used. Following the application of a drawing compound, the sheets are taken to the sanitary ware press line. In the first press, a 1900-ton double-action press, the first draw of the tub is made. The restrike and emboss of the sump are accomplished in a 1200-ton mechanical press. In a 380-ton press the operations of trimming the tub all around and piercing the drain are performed. The fourth press (350-ton) operation is for forming the flange all around. Then the flange is trimmed and returned on a 315-ton press. The last press on the line, a horn press, pierces the overflow.

From the press line, the bathtub goes to the welding line where hanging plates for porcelain enameling are arc welded to the frame. The apron is gun welded to the tub, and diagonal braces welded to the apron

Right: Photo shows pressurized spray room where acid resisting enamel is applied. All air passes through a battery of dry filters.

finishfoto

Below: Workers remove tub from submerging type basket at exit end of automatic pickling machine. Transfer is to pickle dryer conveyor.

Right below: Photo shows interior of pressurized spray room for the application of the first coat of acid-resisting enamel.

finishfoto

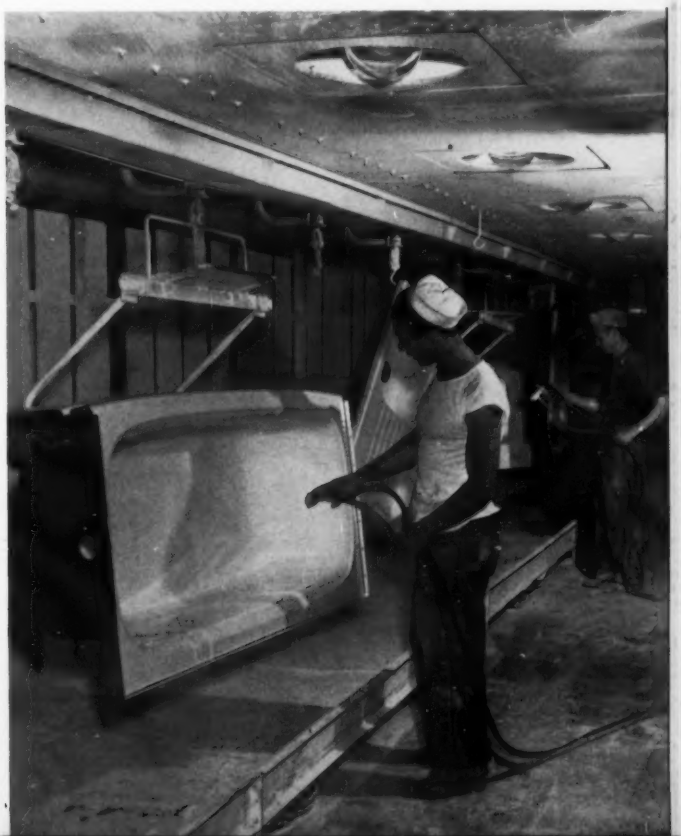
and the tub on both sides. (The same press and welding line is used for sinks.)

Following visual inspection, bathtubs, sinks, and washing machine tubs are conveyed to the pickling line where baskets, of the automatic submerging type, holding an average of 25 washing machine tubs or 9 bathtubs, are loaded on an automatic pickling machine. The 11-tank pickling setup has a capacity of 288 standard washing machine tubs per hour. Total time for the pickling cycle is 35 to 40 minutes.

Ventilation in the pickle department consists of a series of electric blowers, situated on the sides of the tanks nearest the operators, which force fumes across the tanks into updraft exhaust vents on the opposite side.

The mill room

Adjacent to the pickle dryer is the mill room. Raw material is received in palletized bags which are taken to overhead storage by a small lift elevator. Hoppers hold full mill batches with gravity flow to seven mills lo-



Left: Dryer conveyor, at left in photo, passes through brushing booth, to this transfer point for loading the No. 4 furnace chain.

finishfoto

Left below: This brushing station opposite No. 4 furnace chain has a down draft exhaust system for collecting excess enamel dust.

finishfoto

Below: Finished tubs get critical visual inspection for defects before leaving the conveyor line.

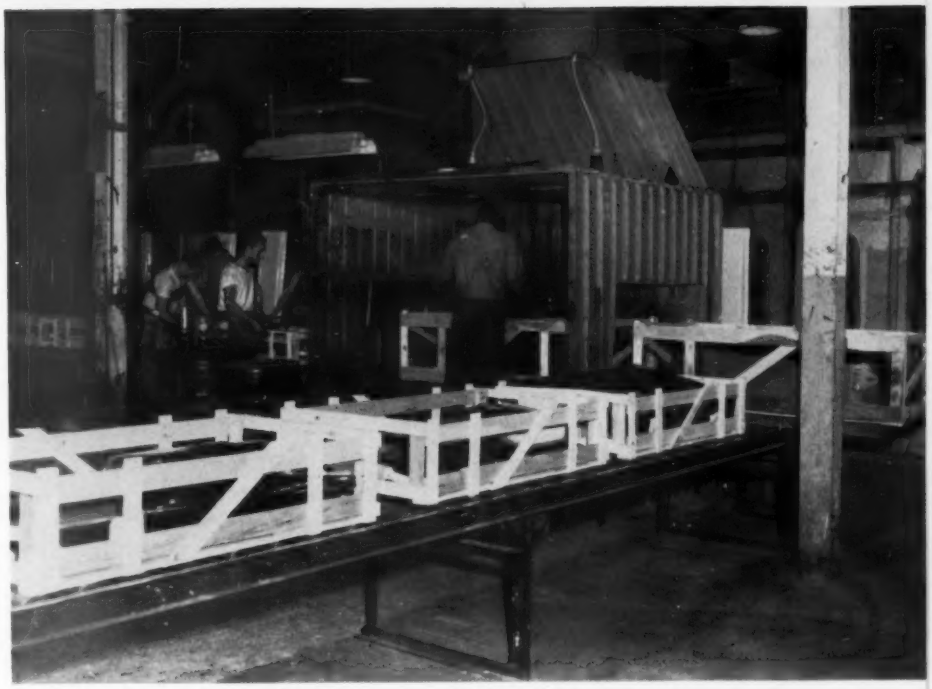
cated directly below the hoppers. There are two 5500 lb. mills, one 2500 lb., one 1500 lb., two 600 lb., and one 100 lb. mill. The mill room floor has gratings which make for ease of cleaning by flushing with water.

In the control room, all batches are tested for color, opacity, etc., before production application. Equipment includes a laboratory size box-type electric furnace, spray booth, reflectometer, microscope, two types of thickness gauges, and other standard items of laboratory equipment for control work.

Pickle dryer

After the ware leaves the pickling tanks, it enters a 400′ straight-through double deck dryer, with the upper deck used for washing machine tubs and the lower deck for sanitary ware. A temperature of 170 to 200° F. is maintained in this gas-fired dryer. Ware moves through the monorail dryer at a rate of 10 to 30 feet per minute, depending upon the type of ware going through.

As the washing machine tubs come



Right: Application of sound deadener to bottom of tubs and sinks. Men on left are completing crating operation on same conveyor line.

finishfoto

Below: Loading of mills is from hoppers located overhead in raw materials storage room, with gravity flow to mills directly below.

Right below: Steel strapping is used effectively for unit loading of bath tubs. Tiers are 5 tubs high.

finishfoto

down from the upper deck of the dryer into the ground coat dipping area, they are first blown out and then inspected. An operator then takes the ware off the conveyor, dips it, and places it on a drain rack. This operation is closely controlled for deposition of ground coat on ware. The first helper, on the opposite side of the dip tank, shakes the tub over a trough before hanging it on a monorail conveyor leading to another double deck dryer. The second helper siphons off excess enamel from inside the bead, and a third helper beads the top rim. (The entire dipping area has a grated floor over a water trench.)

The conveyor carries the ware into the upper deck of a dryer where a temperature of 350° F. is maintained. The conveyor travels 320 feet, making five passes, before reaching the exit end of the dryer. Ware is then transferred to a floor type revolving pallet conveyor which enters a reenforcing booth. As the tub moves

to Page 78 →

See plant layout . . . Pages 40 & 41

Thor reduces shipping losses

and packaging costs on washing machine tubs

a story of improved packaging technique resulting from a cooperative program of study and development

By G. W. Nothnagel • TRAFFIC MANAGER, THOR CORPORATION, CHICAGO, ILLINOIS

finish

Inasmuch as the Thor Corporation has experimented to a great extent on the proper manner of packing of porcelain washing machine tubs which has resulted in substantial reduction of damage, we take this pleasure of outlining our complete packing and handling arrangement, so as to pass on to other industries our experience.

Our new tub container consists of two wooden trays lined with a corrugated pad and a corrugated tube. The two wooden trays telescope the corrugated tube when the container is in the set up position. The enameled tub is placed therein and all of the strain and stress is placed either on the wooden trays or the corrugated tube. The wooden trays are made out of group one lumber and will last for a period of two years or longer. The corrugated pad and tube are made out of double walled corrugated stock and would have a life of about 20 to 25 round trips. The wooden trays, with the corrugated pad therein, will cost approximately $2.25 per set, and the corrugated tube will cost approximately 45¢ each. This price, of course, differs accordingly to the size of the container.

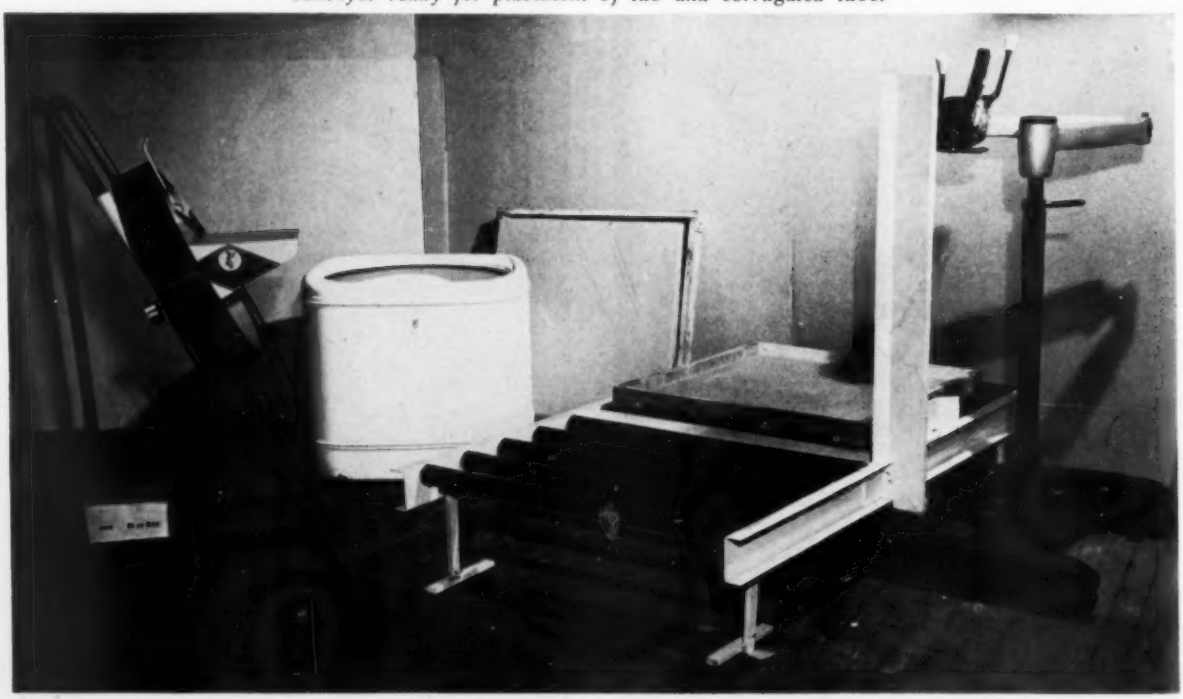
Almost 60% savings in unit packing cost

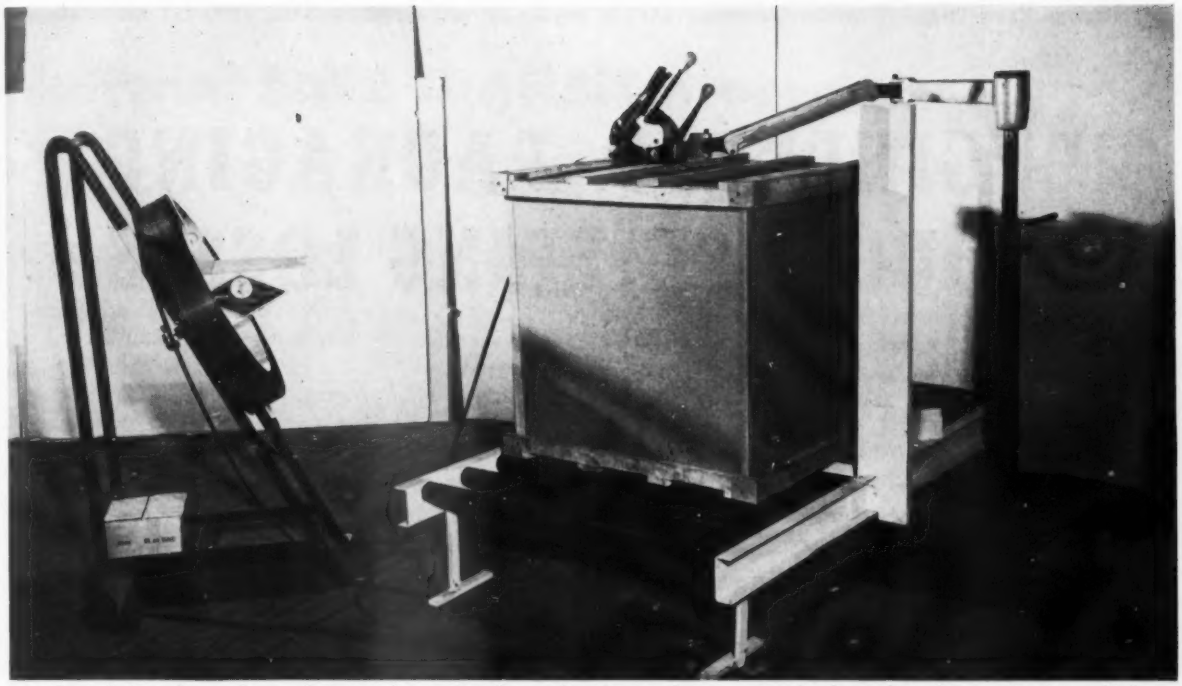
We figure that our prior packing cost before use of the new container was 34¢ per tub. With the use of the new container it has reduced our packing cost to the present figure of 14¢ per tub *(when re-use is considered)*. The figures quoted include labor, container and transportation charges for return of container to origin point.

The two wooden trays are held together by a ⅜" steel band, one to a container. It is possible, according to our experiments, to pack and band four complete containers per minute. This is a 50% savings over the old method which consisted of sealing the bottom and top of the corrugated carton with 3 inch, 60# Kraft sealing tape.

With the use of this new container, it is not necessary to pad the car floor or car ends of the railroad car with

Section of roller conveyor showing first step in the Thor method of packing, with the first wooden tray on conveyor ready for placement of tub and corrugated tube.





Completing the package, the second tray has been placed over the corrugated tube and steel strapping is applied through the use of a special conveyor trough.

worn out cartons and waste paper. The wooden trays afford all of the necessary protection needed for safe transportation and also permit the use of anchor loading.

Over 75% reduction in shipping losses

Our average damage consisted of nine tubs per car when packed in the ordinary corrugated carton. *(Nine tubs are considered to be below average loss.)* The average damage when using the new tub container amounts to only two tubs per car. This is a great benefit to both the carriers and the purchaser. The new container substantially reduced our intra-plant damage which is a great benefit to us.

In order to facilitate the use of the container, we had a number of concerns develop a method for strapping or sealing of the container which, of course, was the greatest concern of the various tub manufacturers who produce our tubs. *(It is naturally of interest to the tub manufacturer to find that he can pack the tubs more efficiently and at lower cost and, at the same time, see a material reduction in shipping damage.)* A steel strapping company designed a very streamlined, neat and speedy system whereby the tub container would be packed on a gravity roller conveyor and would be banded right from the same conveyor without any unnecessary handling. An arrangement of this type is now set up at a commercial testing laboratory in Chicago where all of our testing work was done. Work has also been done on a twin-pack, using this same basic principle.

The complete equipment required for using this type of pack includes: banding tool and stand, and a looping channel for attaching to the roller packaging conveyor.

Storage area reduced by two-thirds

Prior to the use of the new container, we had much difficulty in storing our porcelain washing machine tubs in our plant. Because of packing these tubs in corrugated cartons, we were only able to stack them four or five high, and often this would be dangerous because of the stacks falling over, due to the bottom cartons crushing. With the use of the new container, we can now stack our tubs twelve containers high and require only one-third of the area that was formerly used for tub storage.

These containers, although designed for the movement of our enamel tubs, can be used for many other purposes. We are now using them on shipments of rough and finished castings manufactured at Madison, Wisconsin. The container is large enough so as to carry the same quantity of castings that prior to this time required six corrugated cartons. We estimate that we save about 1½ cents per casting. It is our intention to develop the same container, of course in a different size, to handle other manufactured items which are now being shipped in corrugated cartons. The purpose of the container is that it can be used for many trips and eliminates labor and container waste, and reduces damage to the minimum.

In addition to our commercial laboratory's work, one of the container manufactures spent many hours working with us in developing the container, manner of loading the cars and the intra-plant handling, so that the practical aspects of the new pack were well established before we put it in use.

If our experience can be used by other washer manufacturers to their advantage, the purpose of this article will have been served.

SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT

ENGINEERED PACKAGING REDUCES SHIPPING LOSSES

★

To meet the tests for packaged products outlined in the National "Safe Transit" program, you will need to study your packaged products "from the ground up." Then, you must be sure of a properly engineered "package."

Our modern research laboratory and our experienced packaging engineers are at your service, without obligation, to assist in pre-checking and for any research work that may be required.

We manufacture *all types* of wooden boxes and crates and are therefore in position to consult with you without prejudice and to recommend the best package for your product from the standpoints of quality, shipability, and cost.

Be sure to protect those valuable finished products with the right box or crate for "Safe Transit."

★

NAILED OR HINGED CORNER

PLYWOOD CRAVENEER WIREBOUND

CLEATED CORRUGATED

BOXES OR CRATES

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street Chicago 3, Illinois

Plants at: Helena, Ark. • Greenville, Miss. • Tallulah, La. • Rockmart, Ga. • Chicago, Ill.

SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT SAFE TRANSIT

National SAFE TRANSIT program

wins industy-wide acclaim

NOW that the National Safe Transit Program for the reduction of shipping losses has gained industry-wide proportions and national attention, it is interesting to note the speed with which this voluntary cooperative program has "taken hold" among the manufacturers of finished products.

Early in 1948 this program represented nothing more than an 'idea" in the office of *finish* magazine where the tremendous loss and waste resulting from damage to packaged finished products had come to our attention. This realization of the need for a constructive program for the manufacturers of major appliances and allied metal products led to contacts with potential leaders for such a program, and the laying out of a suggested Coordinating Committee which might logically attack the *apparently* unsurmountable problem. The president of the Porcelain Enamel Institute was then approached, as it was felt that the PEI was the logical organization to coordinate such a cooperative program, due to the wide use of porcelain enamel throughout the major appliance and allied fields, and the common interest of these manufacturers in the reduction of shipping losses.

Program gains wide acceptance in less than one year

Actually, the formalizing of the Safe Transit program had its start in August, 1948, when a meeting was held in Cleveland, Ohio, and the initial appointments to the Safe Transit Committee made by President Clawson, of the Porcelain Enamel Institute.

The speed with which the various projects of the entire program were completed, and the degree to which they have already gained the wholehearted approval and acceptance of key manufacturers, the carriers, and packaging engineers may be credited to three reasons: (1) The wide experience of the general chairman and technical chairman in problems of packaging, the valuable data already available resulting from the practical application of pre-shipment tests, and the generous attitude of their respective companies in donating the time of key personnel and facilities to this cooperative program. (2) The "push" and dogged persistence of the entire key personnel of the Coordinating Committee in seeing that every assigned job was done thoroughly but in the minimum of time. (3) The rapid response of the many industry, carrier and allied associations in appointing official representatives and encouraging their participation so that each individual manufacturer (association member) could be kept informed and encouraged to participate through voluntary action.

Much credit must also go to Charles Williams, of the Educational Committee, the Porcelain Enamel Institute publicity service, and others for their efforts in "spreading the gospel" through all available publication outlets, so that manufacturers might read and understand the basic principles behind the program, what is entailed for voluntary cooperation, and the results that may be expected.

We must admit that we attended the National Safe Transit Committee meeting at the Hotel Cleveland, Cleveland, Ohio, on April 29, with some degree of trepidation, for, although the program had been singularly successful during its comparatively short lifetime, there had been a number of reports of misunderstandings and questions regarding its technical aspects which left no doubt that in some instances at least the Committee had failed in its hope of keeping the policies and purposes of the program as simple as A, B, C, and of making it clearly understood by each potential participating manufacturer that his participation in the program was for his own benefit and strictly on a voluntary basis.

That there were questions to be discussed, and many of them, is attested to in the fact that there are 85 pages of transcript covering the afternoon discussion period which formed a part of the all-day Committee meeting.

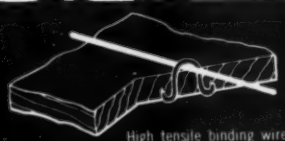
There seems little doubt that everyone in attendance at the Cleveland program will have left the meeting as staunch proponents for the Safe Transit program, and also that the questions and suggestions raised during the afternoon session and the resulting discussion will be most helpful in strengthening and furthering the program's development. →

Policy for the National Safe Transit Program is as simple as this—

The Safe Transit Committee is simply saying to shippers:

"If you will test your packages by these test procedures, experience has shown that your loss and damage and your packaging costs will be acceptable minimums. It is up to each shipper to decide whether or not he will use these test procedures. The program is entirely voluntary and implies no connection with tariffs, freight rates, claim procedures or any other existing transit regulations."

2200 lb. stokers ship safer in WIREBOUNDS



High tensile binding wire is stapled to face sections; staples go completely through and are clinched with the points fully imbedded for maximum strength.

Staples in cleats are driven in such a way that the ends flare after entering the wood . . . thus increasing the resistance to pull-out.

SAVE OVER 50% ON CONTAINER WEIGHT

The versatility of the Wirebound construction principle—the strength of steel with thinner wood—never has been more clearly demonstrated than by the crates specially designed to carry 2,200 pound commercial self-feed stokers manufactured by a well known mid-west producer.* These giant Wirebounds measure 114" x 60" x 36" and are composed of a heavy skid-type base, wrap-around mat and top weighing 218 pounds—282 pounds lighter than the wooden container previously used. The 7/32 inch veneer mat—reinforced with high tensile steel wire—was engineered specifically to reduce shipping damage by affording greater protection. The flexibility of the crate so increases its resistance to the shocks and jars of handling and shipping that these huge stokers are now delivered completely intact, without damage. So whether your shipping problem is "king-size" or compact, a strong, resilient Wirebound can be designed to deliver your goods safely and at lower cost. Get full details today—use the handy coupon below!

WIREBOUND BOX MFRS. ASS'N.

Room 1832, Borland Bldg., Chicago 3, Illinois

☐ SEND COMPLETE LITERATURE

☐ SEND A SALES ENGINEER

NAME

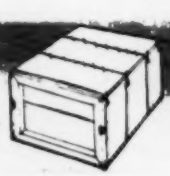
POSITION

FIRM NAME

ADDRESS

CITY ZONE STATE

PRODUCT



*Name on request.

Wirebound
BOXES & CRATES

SIXTY WIREBOUND PLANTS THROUGHOUT THE UNITED STATES

Committee chairmen report

The morning session of the Cleveland meeting was made up of formal reports of the various Committee chairmen.

In closing his report on the progress of the Committee since its inception in August, 1948, Chairman Ralph Bisbee said: "The Coordinating Committee has completed its first work and will depend upon this group *(association representatives and members of the complete Committee)* to pick up the job and carry on from here. The manufacturers and carriers, by banding together and following the Safe Transit standardization program, can show quick results. It is obvious one group cannot hope to do this alone — the carriers *must* do their part—*(Project II)*—the manufacturers must do their part—*(Projects I and I-A)*."

Edward Mackasek, secretary of the Porcelain Enamel Institute, and also secretary of the National Safe Transit Committee, reported on the results of balloting by the various representatives of the industry associations. While some of these representatives are still in the period of "informing" their respective memberships of the complete program, several of the groups have completed this work and already have ballotted their memberships for individual participation by manufacturer members. One of the top ranking associations in this respect is the Gas Appliance Manufacturers Association whose representative, Harold Massey, reported that approximately 80% of the total production of gas ranges is already represented by individual manufacturers who have agreed to participate in the standardized pre-testing program for PACKAGED PRODUCTS, either by installing the necessary equipment in their own plants or by subjecting their PACKAGED PRODUCTS to the same tests in a certified laboratory.

Although Project I-A, covering PACKAGED PRODUCTS weighing less than 100 lbs., did not receive official approval until the Cleveland meeting, Professor F. A. Petersen, representing the Enameled Utensil Manufacturers Council, reported that 100% of the Council membership has given approval and taken steps to install the necessary equipment for standardizing on the I-A program.

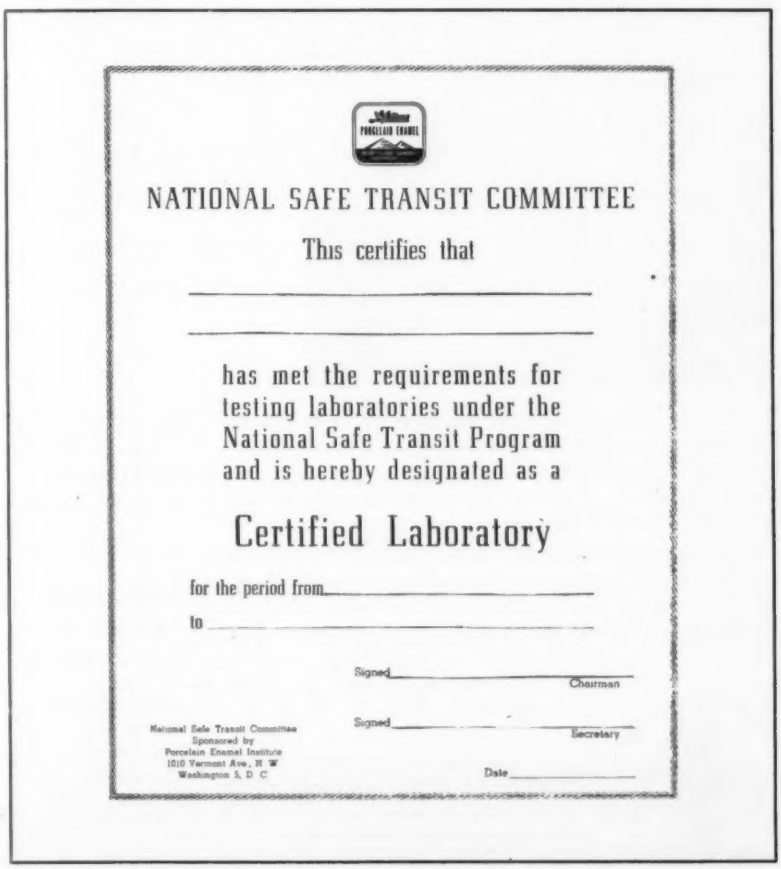
PEI President Clawson

R. H. Thompson, representing the American Washer and Ironer Manufacturers Association, in his report to PEI indicated that approximately 84% of the Association membership has expressed approval of the Project I program which was submitted to them. Approximately one-half of the companies participating will install their own equipment, and the other half will depend upon the facilities of commercial laboratories.

Although many members of the Porcelain Enamel Institute represent raw material suppliers and others to whom the standardized pre-testing procedure would not be applicable, 56 of the 58 members ballotted expressed approval of the Safe Transit plan. No negative votes were indicated on the question of equipment and test procedures as set up.

Other participating industry associations, such as the Institute of Cooking and Heating Appliance Manufacturers, Enameled Cast Iron Plumbing Fixtures Association, the National Electrical Manufacturers Association, and the National Electric Sign Association, are in various stages of considering the plan prior to formal balloting.

Although it seems questionable as



NATIONAL SAFE TRANSIT COMMITTEE

This certifies that

_____

_____

has met the requirements for testing laboratories under the National Safe Transit Program and is hereby designated as a

Certified Laboratory

for the period from _____

to _____

Signed _____ Chairman

Signed _____ Secretary

National Safe Transit Committee
Sponsored by
Porcelain Enamel Institute
1010 Vermont Ave., N. W.
Washington 5, D. C.

Date _____

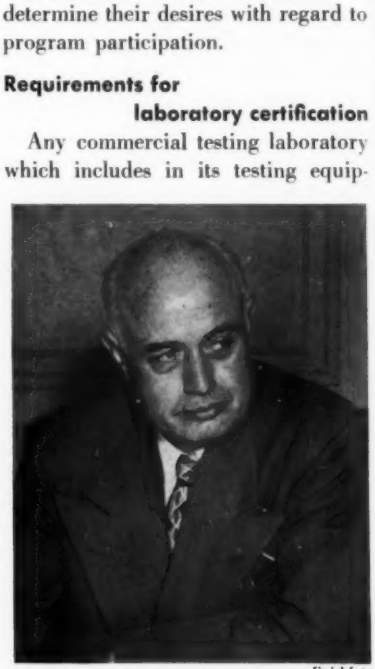
to whether the program as presently set up could apply to many of the products of the sign association, the group, through its secretary, has gone on record as being entirely favorable to the Safe Transit program and offering the fullest cooperation.

Laboratory certification program

Considerable interest was shown in the report on the laboratory certification program presented by L. H. Cargill, chairman, due to the fact that a fair percentage of the manufacturers who have indicated their desire to participate in the pre-testing program are interested in using the facilities of a commercial laboratory. In his report, Cargill showed on a wall map and in report form the logical areas for centralized laboratories, and listings of the companies manufacturing major appliances or allied products located within logical distances of these centers. The next step in the program of this Committee will be to check with all existing commercial package testing laboratories to determine their desires with regard to program participation.

Requirements for laboratory certification

Any commercial testing laboratory which includes in its testing equipment the vibration machine, the Conbur Incline Impact machine, the drop tester and the 2-way ride recorder, as outlined in Projects I and I-A of the Safe Transit program and the necessary personnel for conducting the specified tests, may apply to the Porcelain Enamel Institute for certification. Application may be made at once by any interested laboratories.



finishfoto

Technical Chairman Shands

Upon certification, such laboratories will be listed with the Association representatives, so that the individual manufacturers participating in the program may procure names of all certified laboratories and select one within reasonable distance of their plant operations.

Technical planning sub-committee to assist manufacturers

A sub-committee of the Technical Planning Division has been set up, with P. W. Bush as chairman, with a two-fold purpose.

First, it will conduct an educational program and follow up with companies which have purchased test equipment to provide adequate educational instructions for all those participating in Projects I and I-A.

The second purpose of this subcommittee is the continuation of re-

WE WILL PROVE YOU CAN REDUCE COSTS with FIBER-and-STEEL Strapping

WRITE OR WIRE FOR TEST DEMONSTRATION

on how your shipping losses can be reduced —no obligation

Let the A. J. Gerrard packing engineers prove to you that FIBER-and-STEEL will hold vitreous enamel stove doors or similar vitreous enamel products in a better non-vibrating position during shipment and *will end your claims and complaints due to chipped enamel surfaces.* Uncrating is easier and there are no adhesive stains with FIBER-and-STEEL.

FIBER-and-STEEL is strong. It is a combination of steel strapping and soft, weather-proofed Kraft paper. It is secured with a soft aluminum Gerrard seal. Demonstrations are now being scheduled among stove manufacturers and builders of vitreous enamel products. Write or wire so that you, too, can get information on how to reduce your costs.

FIBER-and-STEEL now used by

- Cribben and Sexton Co.
- Crown Stove Co.
- Perfection Stove Co.
- Odin Stove Co.
- Dixie Foundry
- Norge Division
- Mt. Vernon Furnace & Mfg. Co.

STEEL STRAPPING

A. J. Gerrard & Co.

1958 Hawthorne Place, Melrose Park, Ill. (Chicago Suburb)

search on transit and handling shocks. The sub-committee will continue the program of accumulating research data on in-transit and handling shocks and vibrations in cooperation with all the national carrier associations. Much data has already been accumulated pertaining to shipments by rail, by truck and by air. Bush reported in detail on the results of recent flights sponsored by Air Cargo for the accumulation of test data, and indicated

Chairman Bisbee

that additional flights are planned for the near future.

Testing procedure reviewed

Complete outlines of testing procedures for Project I (100 to 1,000 lbs.) and Project I-A (under 100 lbs.) were again placed in the hands of all Association representatives.

Discussion forum

Following the presentation of all committee and sub-committee reports at the morning session of the April 29th meeting, the entire afternoon was devoted to open discussion with Dana Chase, editor and publisher of *finish*, serving as moderator. In addition to allowing ample time for criticism and open voluntary discussion, Moderator Chase called on each Association representative for specific comments, suggestion or criticism, and in addition gave each guest present a similar opportunity.

Complete transcript of the afternoon session will enable the Coordinating Committee to review all suggestions and criticism for the purpose of making any desirable evolutionary changes for strengthening the plan.

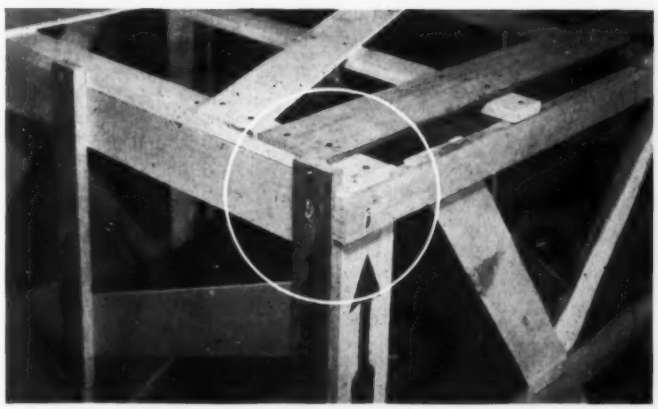
It is interesting to note that all suggestions and criticisms offered have to do with minor details of the program, and that in no instance will the plan as originally outlined require major adjustment. It is also important that no equipment changes will be required to meet any possible changes.

The meeting ended on a high note of confidence in the ability of the National Safe Transit Program to assist every participating manufacturer in materially decreasing shipping losses and to save money in overall packaging costs.

Projects II, III and IV

In connection with Project II (a program by the carriers to parallel Projects I and I-A being sponsored by the industry associations), a committee is being appointed to work with the carrier associations with a

This TIGHT Hinge Corner Makes a STRONGER Crate



The exclusive "Tight Corner" Hinged Crate produced by Bigelow-Garvey offers a degree of rigidity and strength impossible in the ordinary type of collapsible crate. This one feature alone is enough to win the praise of your shipping department. Other features such as pre-drilled nail holes, completely collapsible design, and hardwood construction throughout make for ease of assembly and adequate protection.

Bigelow-Garvey has pioneered in the design and manufacture of crates for safe shipment of porcelain enameled appliances such as stoves, washing machines, ironers, freezers, sinks, bathtubs and similar products for more than twenty-five years. You get the benefit of this experience when you bring your packaging problems to our engineers.

For domestic packaging or for export packaging in either open or completely closed crates, let us submit our ideas and prices for "safe shipment" containers.

Also

BOX SHOOKS PALLETS BULKHEADS

Write us regarding your shipping problems.

BIGELOW-GARVEY LUMBER CO.

General Office and Laboratory

320 West Huron Street • Chicago 10, Ill.

Mills • Arkansas • Georgia • Wisconsin • Minnesota • Washington

view to getting their plans on paper in a similar manner to those of the industry group, and to aid in getting earliest possible action on all points in the program as finally established and approved.

A sub-committee is also being established under the chairmanship of M. F. Weber, of American Stove Company, to get immediate action on Projects III and IV. Project III is a program for standardization of placards to be used in marking loads of major appliances and allied products. Project IV is a joint research project to be conducted between industry, carriers, and carloading supply manufacturers, for the purpose of collecting all available constructive information on correct loading practice. No specifications are contemplated in connection with this project. It will be conducted strictly as an educational program to make available to all participating manufacturers the latest and most satisfactory methods of loading cars and trucks.

Forty-four attend meeting

Present at the Cleveland meeting were the following members of the National Safe Transit Program Committee:

R. F. Bisbee, General chairman
E. H. Shands, Chairman, Technical Planning Division
Dana Chase, Chairman, Educational Division
C. B. Williams, Educational Division
I. J. Fairchild, Enameled Cast Iron Plumbing Fixtures Assn.
H. G. D. Nutting, Technical Committee
E. C. Manthei, Technical Committee
F. A. Petersen, Enameled Utensil Manufacturers Council
L. H. Cargill, Packaging Service Corporation
P. W. Bush, Chairman, Sub-Committee, Technical Planning Division
A. E. Dowling, Railway Express Agency
R. H. Thompson, American Washer and Ironer Manufacturers Association
B. F. Gallavan, Wirebound Box Manufacturers Association
A. L. Green, Association of American Railroads
Emery F. Johnson, Air Cargo, Inc.
Harold Massey, Gas Appliance Manufacturers Association
Edw. Zelinski, National Electrical Manufacturers Association
Joseph H. Singer, Society of Industrial Packaging and Materials Handling Engineers
John M. Miller, American Trucking Associations, Inc.
S. W. Luhrs, Fibre Box Association
W. N. Sardo, National Wooden Box Association
J. R. Watkins, Association of Manufacturers of Watkins Shipping Containers
Edward Mackasek, Porcelain Enamel Institute

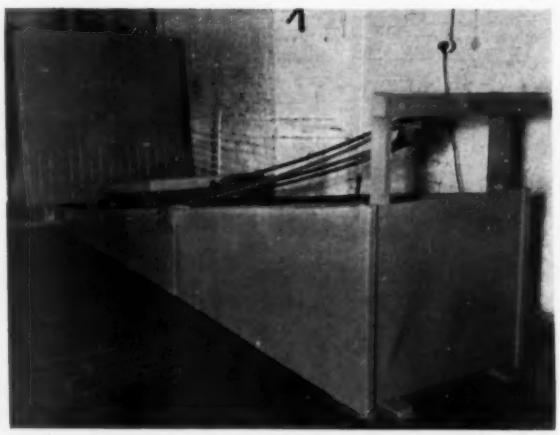
In addition to the Committee membership, the following guests were present:

C. D. Clawson, Ferro Enamel Corp., President, Porcelain Enamel Institute
John C. Oliver, Porcelain Enamel Institute
G. Haskell Smith, Pemco Corporation
S. C. Deimel, Mullins Manufacturing Corp.
B. H. Cross, Enamel Products Company
Herbert Turk, Pemco Corporation
H. J. Benzie, General Electric Company
M. F. Weber, American Stove Company
C. P. Lohman, Pemco Corporation
E. W. Coles, Railway Express Agency
R. W. Cupe, Railway Express Agency
D. M. Belhune, Railway Express Agency
Ben F. Kells, Container Corporation of America
C. S. Bather, Geo. D. Roper Corporation
Frank Morelli, Ingram-Richardson Mfg. Co. of Beaver Falls
Charles E. Felt, National Wooden Box Association
Harold Flynn, Association of American Railroads
Wesley H. Lees, Westinghouse Electric Corporation
Edwin L. Hall, American Gas Association Laboratories
D. C. MacDonald, Industrial News Service
Helen Smith, Industrial News Service

FOR BETTER PACKAGING - -

use a recognized

Container & Materials Testing Laboratory



The Conbur incline testing device for subjecting containers and packaged products to controlled impacts.

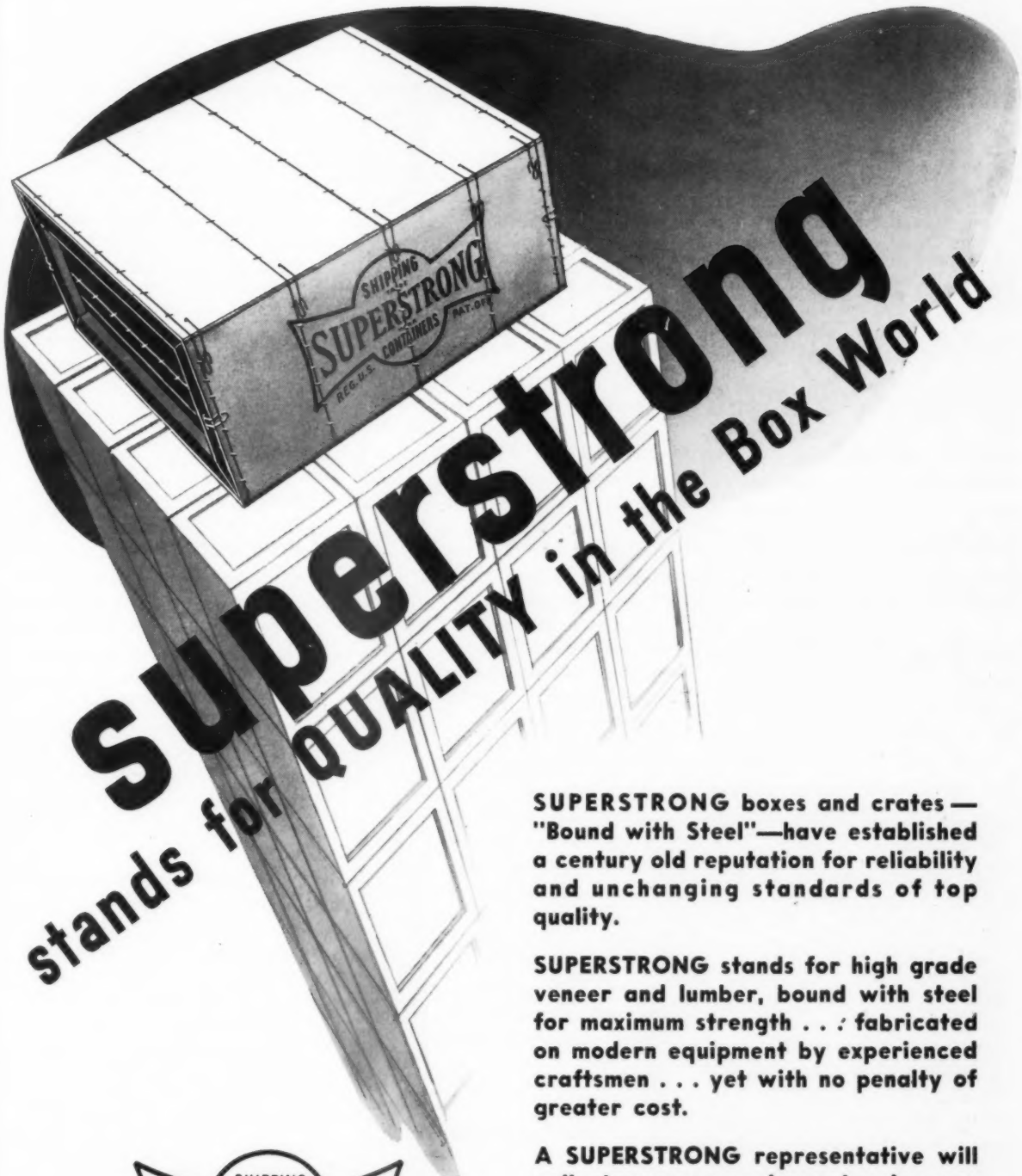
This drop test equipment will take packages up to 100 lbs.

Our laboratory has complete facilities for testing all types of shipping containers and materials.

The Don L. Quinn name is recognized by carriers and shippers alike as an accepted source for authoritative information on packaging and shipping problems.

Over twenty-five years of specialized experience.
Our services are available to you.

THE DON L. QUINN COMPANY
224 West Kinzie Avenue
Chicago 10, Illinois Phone: SUperior 7-9749



superstrong

stands for QUALITY in the Box World

SUPERSTRONG boxes and crates — "Bound with Steel"—have established a century old reputation for reliability and unchanging standards of top quality.

SUPERSTRONG stands for high grade veneer and lumber, bound with steel for maximum strength . . . fabricated on modern equipment by experienced craftsmen . . . yet with no penalty of greater cost.

A SUPERSTRONG representative will call at your convenience to give you the full story of these better shipping containers.

SHIPPING TRADE SUPERSTRONG MARK CONTAINERS REG. U.S. PAT. OFF.

RATHBORNE, HAIR AND RIDGWAY COMPANY
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Interesting comments on SAFE TRANSIT program

M. F. Weber, ICHAM Traffic Committee, GAMA Traffic Committee, and National Stove Rate Group

"Speaking for the American Stove Company, we believe the program has much merit, and if the manufacturer's packaged product meets the various tests, a greatly improved damage record will result.

"Anticipating the effects of these tests, the American Stove Company found out by engineering changes, enamel control, proper assembly and crating, and better carloading, we eliminated . . . . about 80 per cent of the damage we had been having. That was in a period of from June, 1948, until December, 1948.

"I don't see how, if you adopt the Safe Transit program, you can but profit."

J. R. Watkins, Association of Manufacturers of Watkins Shipping Containers

"Our group is heartily in favor of the program, and we think that any kind of a test that you set up as standard is something that we can shoot at in container design. Today we have nothing at all by which to design our containers. That is true of all containers. In other words *(speaking figuratively)*, we may design a container, give it to a manufacturer, package the product, and say, 'All right, let's throw it down this flight of steps.' If it gets down all right, you have a good container.

"If you have a set of tests to follow in your industry, then these box manufacturers can design their containers, test in the laboratories, and meet the test required — and then we have something to sell. We have something to talk about. If the container does not meet it, we can redesign so it will. What I like about the whole thing, and what my group likes is the fact that now they have something to shoot at, and they can have a container to meet that with a minimum specification."

W. N. Sardo, National Wooden Box Association.

"Our industry, with its 50 years of experience in our trade association *(celebrates its 50th anniversary this year)*, wants to take this opportunity to commend the P.E.I. upon the most noteworthy progress that has been made in the prevention of loss and damage in these first steps in your program. We think that your job is of such value to American industry and of such noteworthy achievement that management of the National Association of Manufacturers should cite you for an industrial award. That is sincere, gentlemen.

"We have always believed that shipping containers should not be merely a specification, but should stand on performance and yours is definitely a step toward making a container perform. After all, it is not the container that the customer is paying for. He is paying for your product, and your good will is the factor that is at stake — and repeated business. Only through *performance* of containers can you expect to maintain solvency of your business."

A. E. Dowling, Railway Express Agency

" . . . We had one manufacturer of gas ranges, a new manufacturer, who started to ship ranges, and he had quite a bit of damage. We don't handle the ranges, but the repair parts were sent by railway express. We handled in August, of 1947, 348 claims for damage from that one house. By cooperating with them, making suggestions as to packing *(similar to the I-A program)*, going and talking to them, we have been able to handle three times the amount of business we handled in 1947 for these people and reduce our claims for the month of January to 8.

"I think the program has all the merit that everybody wants it to have, and I know it will work. We will help and do everything we possibly can to improve our service, handling, and give you the kind of service you want."

Joseph H. Singer, Society of Industrial Packaging and Materials Handling Engineers.

"The Society of Industrial Packaging and Materials Handling Engineers believes that the Safe Transit program of the Porcelain Enamel Institute and affiliated groups is immensely worthwhile and an important contribution to the advancement of scientific product processing and handling. We salute the organizations, companies, and individuals who have fostered and participated in this program.

"As a national group our society will cooperate in furthering this program and will distribute to its membership any summary of the program which will make available information on this purpose. Inasmuch as our membership is approximately 1100, the value of such a distribution will readily be appreciated. You will recall that we stated that in one of the meetings that we would cooperate in every way and that we would participate in any program that you may have."

Wesley H. Lees, Traffic Manager, Westinghouse Electric Corp.
(a talk before the National Safe Transit Committee)

"Traffic people know that loss and damage suffered in transit have a way of getting into transportation

charges. It is right that they should—in fact, it is inevitable. So, any action your committee can take to reduce loss and damage in transit makes a traffic manager happy.

"No customer is ever happy when merchandise he wants to sell arrives in an unsalable condition.

"As a traffic man, I am most happy to applaud the splendid, sensible, down-to-earth practical approach to the problem of 'safe transit' on porcelain enameled products . . . .

"Your program, needless to say, has my wholehearted endorsement. I should like to see it put into full use."

***Irving M. Peters*, General Chairman, National Management Committee, 1949 Perfect Shipping Campaign of the Shippers Advisory Boards**
(in a talk, "How the Loss & Damage Battle Will be Won," before Transportation Club Buffalo, New York)

After outlining the general picture with regard to shipping losses, and referring to a number of creditable programs and organizations active in plans for reducing losses, Mr. Peters said:

"The Safe Transit program, sponsored by the Porcelain Enamel Institute, is the latest and biggest development of its kind. Here's a case where six of the largest industries of the country combined their experience and talents in support of what appears to me to be the most scientific plan ever devised for safeguarding shipments against the common hazards of handling in factory, warehouse and retailing, as well as in transit by all types of transportation. Many manufacturers have installed all of the recommended test equipment, costing about $1800, for determining, before shipment, whether the packaged product will reach the consumer in good condition. Those who have reported their experience say that damage has been reduced substantially, and the use of the test equipment has enabled them to spot faulty design or manufacturing before the product left the plant. *to Page 54* →

ACME STEEL CO. CHICAGO

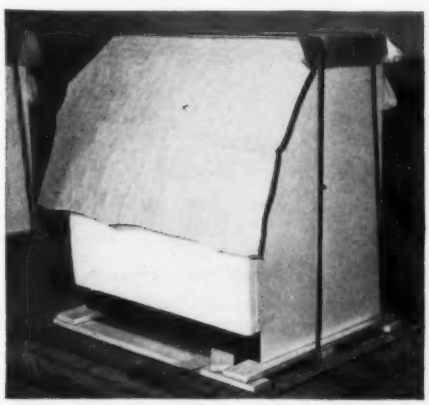
9 out of 10 companies can save by packaging with ACME STEELSTRAP

Read how Westinghouse Electric Corporation saves 30c per unit!

This famous manufacturer uses two flat steel straps to easily and quickly secure each Laundromat to a skid base before crating. This eliminates interior blocking and reduces the amount of padding, with a clear-cut savings of 30c per unit, and assures protection.

Naturally, every manufacturer wants his products delivered in perfect condition. Acme Steelstrap helps assure product protection at a definite savings.

Over 45,000 other users of Acme Steelstrap report similar savings of time, labor, and packaging materials. You can probably do the same. Why not ask an Acme Shipping Specialist to look over your packaging and shipping operations? There's no obligation. Or mail the coupon today for further details.



Westinghouse Laundromats, securely strapped to skid bases, are easily and quickly handled by fork trucks.

STRAPPING DIVISION
ACME STEEL COMPANY
NEW YORK 17 ATLANTA CHICAGO 8 LOS ANGELES 11

ACME STEEL COMPANY, Dept. FI-69
2838 Archer Avenue, Chicago 8, Illinois
☐ Have representative call.
☐ Send free booklet, "*Savings in Shipping.*"

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

American Ceramic Society

fifty-first annual meeting

finishfoto

At speakers' table during annual banquet are John Whittemore, left, retiring president, and Hobart Kraner, newly installed ACS president.

PLEASANT weather prevailed in Cincinnati, Ohio, during the week of April 24 for the 51st annual meeting of The American Ceramic Society. Official registration was reported as 1850, with total attendance near 2000. This is approximately the same registration as at the Golden Jubilee meeting in Chicago last year.

Official headquarters for the convention was the Netherland Plaza Hotel, with other downtown hotels cooperating to house the capacity crowd.

Kraner heads slate of new officers

Hobart M. Kraner, of Bethlehem Steel Corp., Bethlehem, Pa., heads the society as president succeeding John W. Whittemore. J. W. Hepplewhite, of Edwin M. Knowles China Co., Newell, W. Va., is president elect.

Three vice presidents were elected this year. They are A. Lee Bennett, Gladding, McBean & Co., Los Angeles; Howells Frechette, Ottawa, Ontario, Canada; and Robert Twells, Electric Auto-Lite Co., Fostoria, Ohio. Treasurer is W. E. Cramer, Industrial Ceramic Products, Inc., Columbus, Ohio.

Official personnel of the Enamel Division includes: G. H. Spencer-Strong, trustee; B. W. Sweo, chairman; F. A. Petersen, vice chairman; and E. E. Marbaker, secretary. *(See report of Enamel Division for further information.)*

Official personnel of the Materials and Equipment Division includes: G. C. Betz, Metal & Thermit Corp., New York City, chairman; J. S. Nordyke, The Eagle-Picher Co., Pittsburgh, Pa., vice chairman; and C. M. Lambe, U.S. Gypsum Co., Chicago, secretary.

Official personnel of the Refractories Division includes: L. C. Hewitt, Laclede-Christy Clay Products Co., St. Louis, Mo., trustee; Stuart M. Phelps, Mellon Institute, Pittsburg, Pa., trustee; E. C. Petrie, North American Refractories Co., Cleveland, Ohio, chairman; P. G. Herold, Missouri School of Mines, Rolla, Mo., vice chairman; and A. P. Thompson, Mellon Institute, secretary.

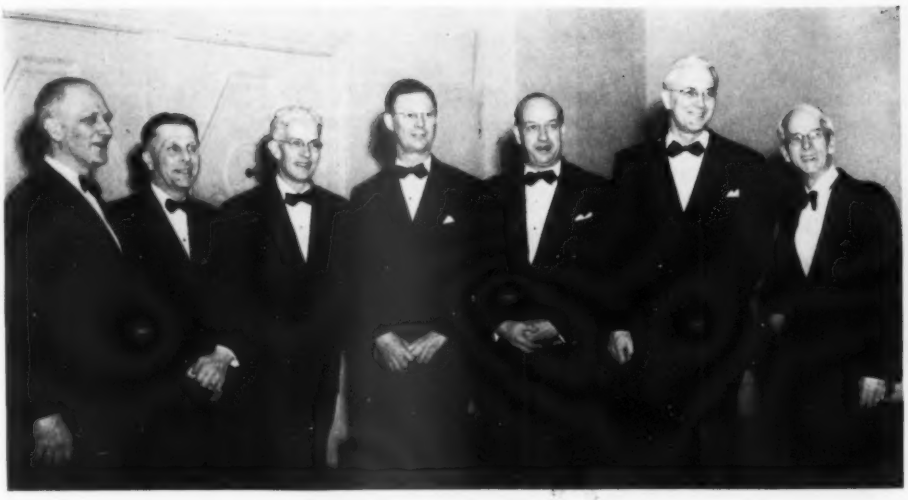
Social activities included School dinners, Camera Club dinner, floor show and dancing on Monday evening, and the annual banquet in the Hall of Mirrors on Tuesday evening.

Registration began on Sunday and carried through Monday and Tuesday. Division sessions started Monday afternoon and continued through to Wednesday afternoon. There were about 130 papers on the convention program.

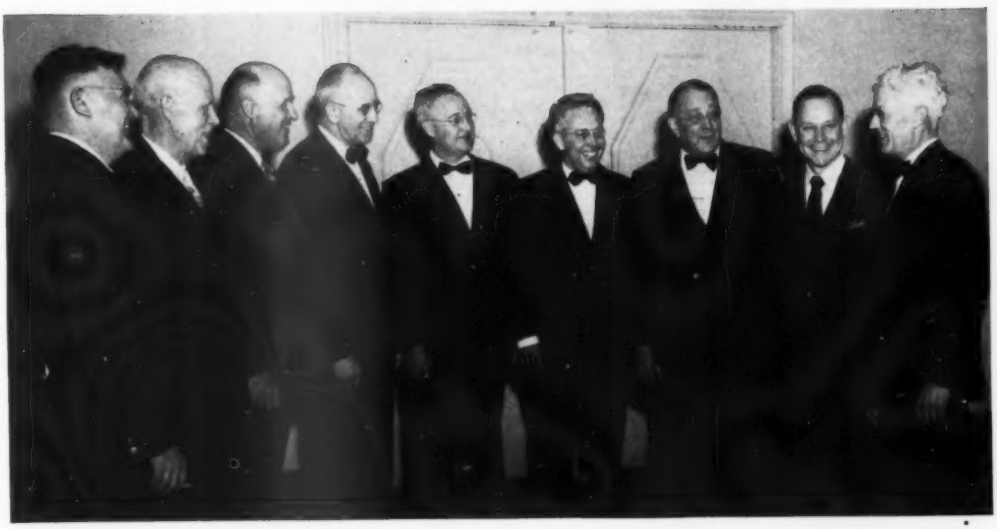
On the last day of the meeting plant tours were made, including a trip through the Armco Steel Corporation plant in Middletown.

Charles Pearce, left, ACS general secretary, with two new ACS trustees, G. H. Spencer-Strong (Enamel) and S. M. Phelps (Refractories).

PHOTO COURTESY A.C.S.



Left: The American Ceramic Society officers for 1949-1950 include, left to right: Charles Pearce, general secretary; W. E. Cramer, treasurer; John Whittemore, past president; Hobart Kraner, president; James Hepplewhite, president-elect; and Robert Tweels and Howells Frechette, vice presidents.



Above: ACS new fellows include, left to right: J. E. Wiss, Arthur Tool, Kenneth Henry, Roy Meeker, Clyde Williams, Harold Simpson, E. E. Marbaker and Lane Mitchell, with John Whittemore, past president.

Right: The three winners in student speaking contest are congratulated by the contest judges. Left to right are: L. J. Trostel, E. B. Fritz, James Hepplewhite, Robert F. Whitford (Alfred), Richard Winchell (Rutgers) and Arthur Meiresonne (Ohio State).

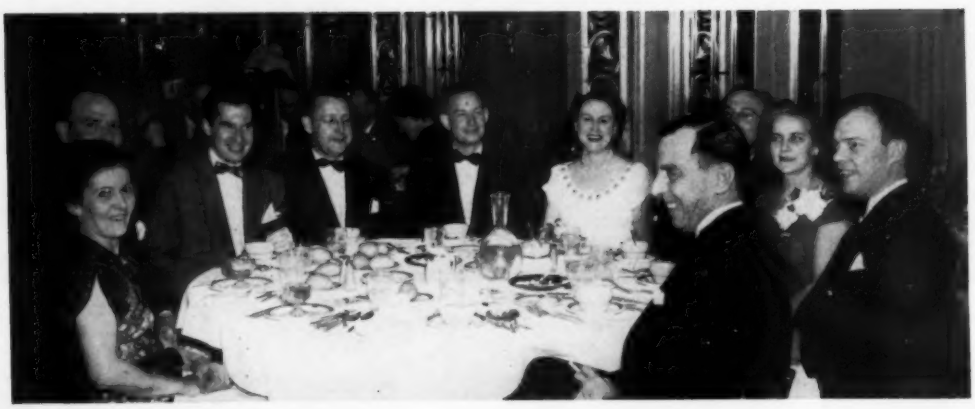
Left: Jean H. Leopold, of Leopold & Cie, Strasbourg, France.

Right: Frans Gieseke, of Kockums Enameling Works, Ronneby, Sweden.

At Pemco's table at ACS banquet, reading clockwise, were: Mrs. Hindes, Stanley Hindes, John Marquis, G. H. Spencer-Strong, Henry Craven, Mrs. Willis, Karl Turk, Jr., Mrs. Turk, Jim Willis & Jake Eagle.

Left: Woody Carpenter, of Ing-Rich; Art Karrer, of Seeger; and R. K. Hursch, of U. of I. faculty.

finishfotos



Left: James Crandall, of Bureau of Standards, and Wm. W. Coffeen, of Metal & Thermit.

Right: George Tuttle, of Benjamin Electric, and Lynn E. Fussell, student at U. of I.

Enamel division program report

A. C. S. fifty-first annual meeting

with comprehensive authors' resumés of division papers

TWELVE technical papers were presented by the Enamel Division at the 51st annual meeting of the American Ceramic Society, in Cincinnati, Ohio. The number of papers was less than the number read at previous meetings, but this allowed more time for discussion of each paper.

The program was opened Monday afternoon, April 25, under the direction of Ben J. Sweo, of Ferro Enamel Corporation, program chairman; Dwight G. Moore, of National Bureau of Standards, division chairman; and Fred A. Petersen, of University of Illinois, secretary.

Presiding chairmen at the various sessions, which had near-capacity attendance were: Dwight Moore; William W. Coffeen, of Metal and Thermit Corporation; James B. Willis, of Pemco Corporation; and Ralph L. Cook, of the University of Illinois.

New division officers

At the Enamel Division business session, held Tuesday afternoon, the following new officers were installed: George Spencer-Strong, of Pemco Corporation, trustee; Ben J. Sweo, of Ferro Enamel Corporation, chairman; Fred A. Petersen, of Department of Ceramic Engineering, University of Illinois, vice chairman; and E. E. Marbaker, of Mellon Institute, secretary.

Overseas visitors in attendance

Among overseas visitors attending the Enamel Division sessions were Frans Gieseke, of Kockums Enameling Works, Ronneby, Sweden, and Jean H. Leopold, of Leopold & Cie, Strasbourg, France.

A number of enamelers attending the meeting made an impromptu tour through the plant of W. A. Barrows Porcelain Enamel Co., in Cincinnati, on Monday morning.

Acid resistance characteristics of titanium enamels

By LEE R. FULLER

The acid resistance characteristics and variations thereof are considered for three types of acid resisting enamels. Type I included titania opacified enamels maturing at 1540° F. —1600° F.; Type II included titania opacified enamels maturing 50° F. to 100° F. lower; and Type III included an antimony opacified and a clear acid resisting enamel.

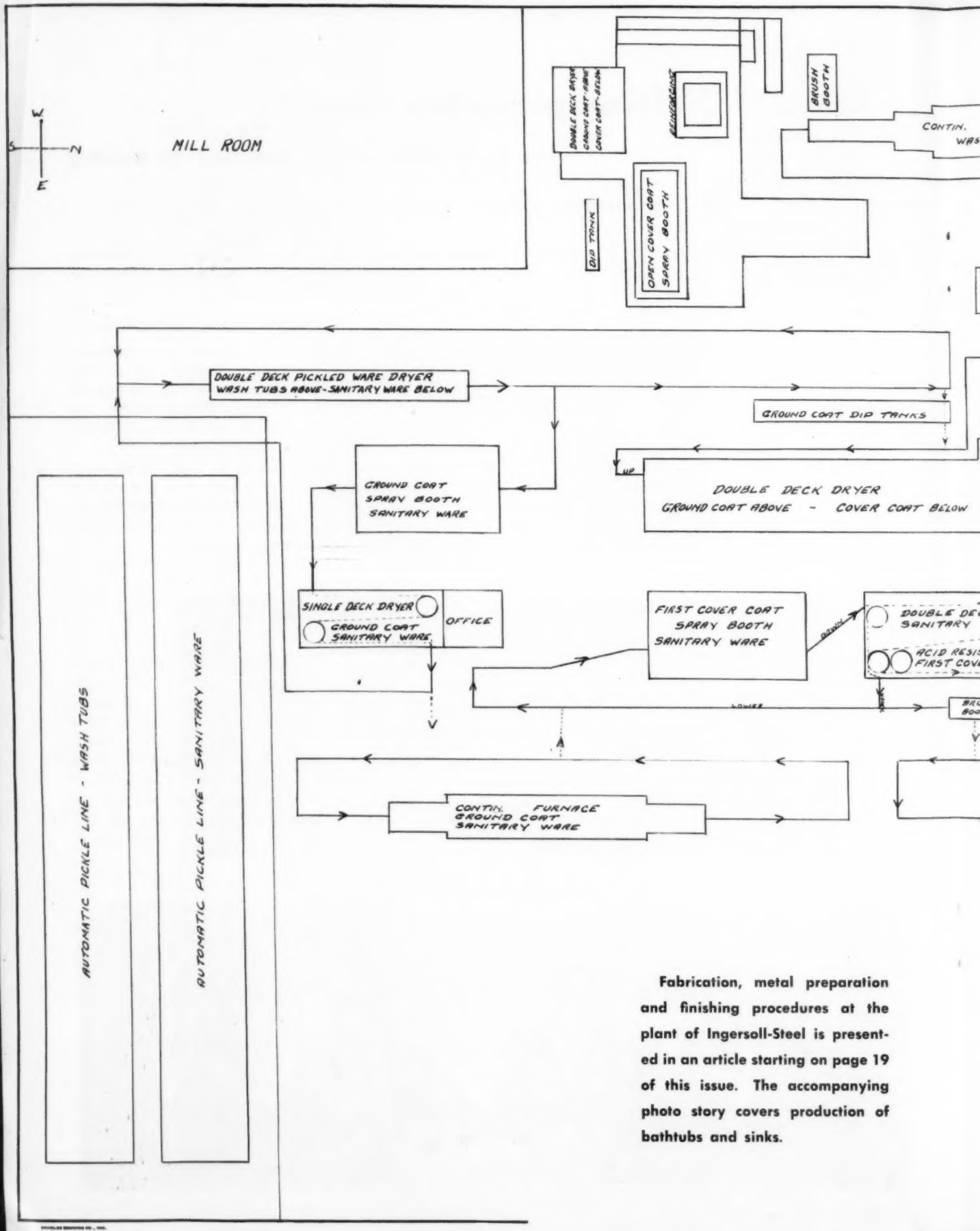
Enamels fired over a 100° range of temperatures were subjected to a two hour exposure employing 10% citric, 10% acetic, 10% lactic, 10% tartartic, and 3% butyric acids, and selected enamels were tested with 10% citric acid for 15 minutes. The acid resistance was graded before and after abrasion of the acid treated areas using the Porcelain Enamel Institute standard acid resistance test.

The acid resistance of all enamels improved with an increase of maturing temperature; uniformity of Types I and III decreased with maturing temperature while that of Type II increased. The effect of abrasion on acid resistance varied for the enamels; abrasion improved the uni-

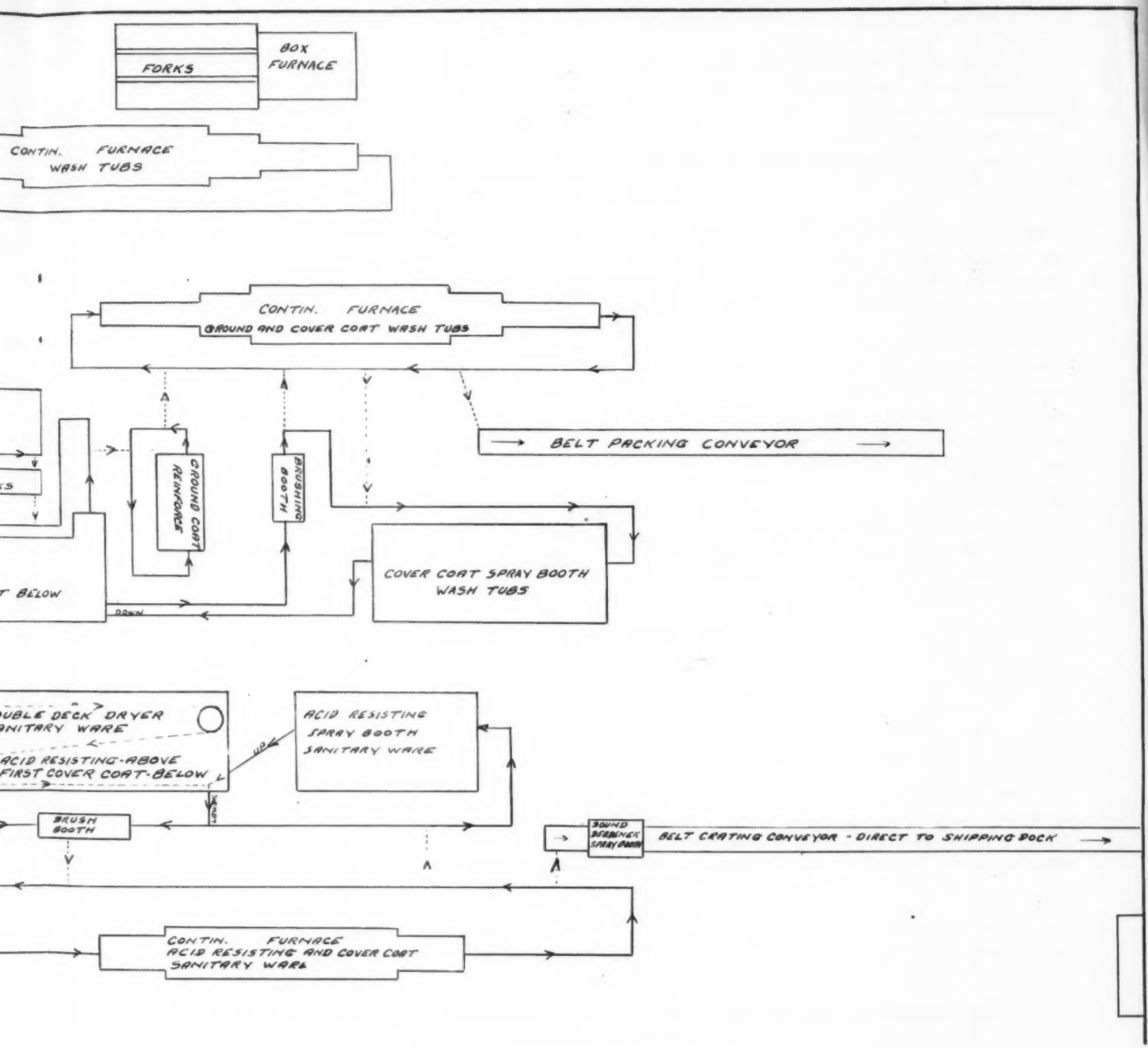
to Page 42 →

New officers of the Enamel Division are, left to right: G. H. Spencer-Strong, trustee; B. J. Sweo, chairman; E. E. Marbaker, secretary; and F. A. Petersen, vice chairman.

finishfoto



Fabrication, metal preparation and finishing procedures at the plant of Ingersoll-Steel is presented in an article starting on page 19 of this issue. The accompanying photo story covers production of bathtubs and sinks.



A four continuous furnace plant for sanitary ware and washing machine tubs

this drawing shows the metal preparation and finishing departments of a high production manufacturing plant

→ *from Page 39*

formity of Type I but had no effect on uniformity of Types II and III. Reduction of clay improved acid resistance, decreased variation of acid resistance with abrasion, and improved uniformity of Types I and II. Citric, lactic & tartaric acids produced more severe attack than lactic & tartaric.

Water and its significance in porcelain enameling

By F. H. KAHLER AND J. F. WANTZ

Water is a major ingredient for the porcelain enameler and merits consideration with respect to source, composition and methods of treatment.

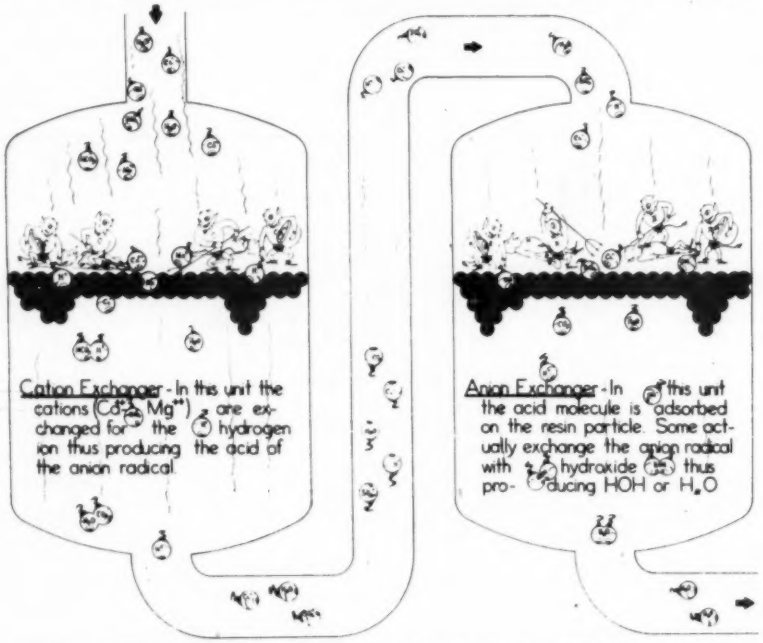
Water for municipalities is obtained from two principal sources: ground waters and surface waters. Ground waters always contain appreciable amounts of dissolved minerals but are quite constant in composition. The mineral content of surface waters depends on the waters' source and may vary widely.

Early studies of water solutions lead to the development of the theory of "ionization" which assumes that all salts separate into parts called "ions" when dissolved in water. As all salts "ionize," the activity of materials in water must be due to the ions.

Natural materials called "glanconites" were found to have the property of removing hardness from water by ion exchange. Later, materials were developed operating on the same principle which gave much higher capacities.

Soft water is useful to the porcelain enameler in the cleaning operation. It decreases the consumption of soap or detergent and increases the overall efficiency of the cleaning room.

Ion exchangers used in softening can be regenerated with acid and coupled with an acid adsorbing resin to provide De-ionized water. This De-ionized water is comparable to distilled water in purity.



De-ionized water is advantageous for use in the mill room as it gives assurance that the water used will be uniform. A mill formula may be set up and used continuously with full confidence that uniform results will be obtained. With untreated water, frequent adjustments of the mill formula are required to compensate for changes in the analysis of the water suppy.

The relation of expansion as measured by warpage to crossbend failure of porcelain enamel

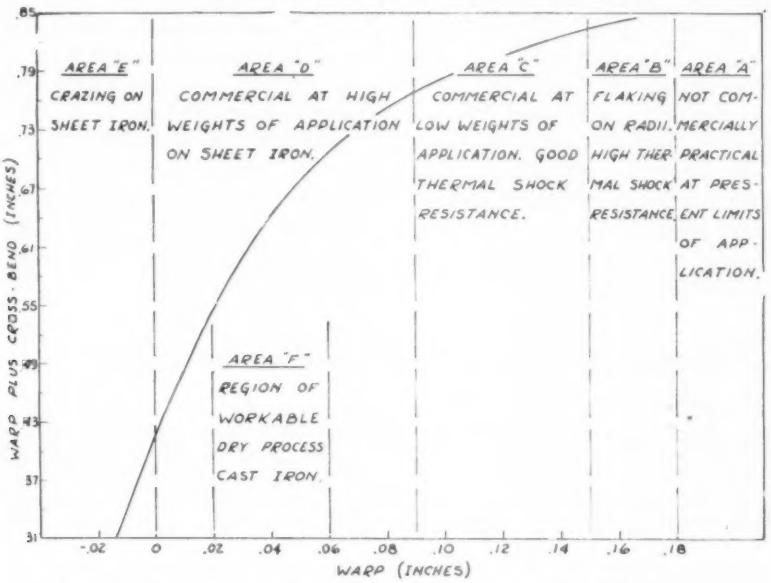
By D. R. GOETCHIUS AND E. E. BRYANT

The selection of porcelain enamels to resist failures due to various types of fracturing is a problem worthy of much study. It is recognized that the coefficient of expansion of the enamel is an important factor in determining resistance to fracture. Enamels of low coefficients of expansion fracture spontaneously over radii, while those having high coefficients of expansion craze. Factors other than expansion may contribute to fracture failure. A study was made to determine what relation exists between coefficient of expansion (as measured by warpage) and fracture resistance (as measured by the crossbend test).

Thirty-five enamels representing a wide range of expansion and composition were tested. The amount of bowing caused by the application of 0.006 inches of cover coat enamel applied over 0.004 inches of ground coat was determined. These samples were then deformed in the crossbend machine until failure. An average value for both warp and crossbend was determined from three samples. Normal mill additions and firing temperatures were used with the exception of the dry process cast iron enamels which were milled with six per cent clay and fired at 1400° F. Clear frits were milled with four per cent color additions.

It was found that resistance to fracture by crossbend increased sharply as warp increased from zero

to 0.06 inches. Above this point warpage had little effect on resistance to fracture. It appeared likely that in the region of 0.06 inches warp there was a transfer of stress involving some acute area of the four component system (ground coat, steel, top ground coat and cover coat), possibly that of the ground coat layer under the cover coat.



The greatest variation from either curve is noted in the antimony opacified sheet iron and cast iron enamels. It is evident that these curves would not accurately represent enamels of all types. This method may be used to predict accurately performance behavior of the same type enamels, or estimate roughly general characteristics of enamels of different types.

The fact that antimony enamels do not fall on the curves indicates that properties other than expansion do at least have a minor effect on fracture. Possible factors involved could be tensile strength or elasticity, these are influenced by crystallinity or density.

The properties of these enamels as determined by commercial experience is compared to warpage and crossbend failure values. Enamels having high warp (low coefficient of expansion) have to be applied at low weights of application. Design of ware is important. Thermal shock resistance is excellent. Enamel failure is generally caused by flaking on radii.

As warpage decreases heavier enamel may be applied, thermal shock resistance lessens, flaking on radii becomes less and assembly damage by flexure becomes greater. In the area of zero to minus warp crazing becomes apparent.

It was concluded that expansion as measured by warpage is a strong influence on crossbend failure of enamels in the higher expansion range. Variations in the lower expansion range (high warp) do not effect crossbend failure.

Factors other than expansion appear to be of some importance in crossbend failure as antimony and zircon enamel differ consistently.

The properties determined by the warp and crossbend test appear to be of value in predicting enamel performance.

Correlation of weather resistance of porcelain enamels with chemical test data

By B. J. Sweo

The increasing use of porcelain enamel as an architectural finish has emphasized the need for data which will be of value in predicting the service life of installations made of porcelain enamel. The recent application in the housing field has added to the urgency of this need. The objective of the work reported herein is in some measure to fill this need by pointing out relationships between laboratory test data and exposure test observations which will aid in determining the suitability of enamels for exterior exposure applications.

Previous studies, by the author and others, of the exposure behavior of enameled specimens have led to the general conclusion that for architectural installations, where appearance and absence of fading are of importance, acid resisting enamels should be specified. It has been the experience of the author that some enameled surfaces which are classified as acid resisting, according to the P.E.I. standard acid resistance test, show a decided appearance change when exposed to weather. It follows therefore that either the general conclusion concerning acid resistance in relation to weather resistance is incorrect or the accepted test methods in some cases do not give a proper classification of acid resistance.

Twenty-one 6" x 8" enameled specimens of 20 gauge iron representing a wide variety of compositions were exposed in an industrial area for approximately ten months and were visually graded in direct comparison with an unexposed standard for appearance change. The specimens were graded by ten observers in this manner and a "weatherability rating" established for each specimen based on the average of the ten ratings.

Chemical resistance tests were conducted with 4" x 4" specimens of 20 gauge iron enameled with the same enamels and prepared at the same time as the exposure test specimens. The tests conducted were as follows:

(1) Boiling with distilled water.

(2) Boiling with 6% citric acid solution.

(3) Boiling with 5% sodium pyrophosphate solution.

(4) P.E.I. research test for acid resistance.

The boiling tests consisted of main-

taining a boiling solution of the test reagent in contact with a weighed specimen for 2½ hours. At the end of the boiling period the specimen was washed with distilled water, dried and weighed and the loss of weight determined. The acid resistance tests were carried out in the manner outlined in Bulletin T-7 of the Porcelain Enamel Institute. Loss of gloss data were obtained from the acid tested specimens. These data were correlated with the weatherability ratings established in the manner described.

Although the exposure time of approximately ten months allotted the specimens in this study is small in terms of the desired service life of porcelain enamel installations for exterior exposure, nevertheless the appearance changes occurring within the exposure period were such as to permit elimination of the compositions unsuitable for exposure applications. It is the opinion that those compositions which were considered by the observers to have adequate weather resistance under the conditions of exposure employed would show continued weather resistance under extended exposure conditions.

The results of the study may be summarized as follows:

(1) No correlation exists between weather resistance and resistance to boiling distilled water.

(2) No correlation exists between weather resistance and resistance to a boiling solution of sodium pyrophosphate.

(3) Good correlation exists between weather resistance and resistance to a boiling 6% solution of citric acid.

(4) With the exception of one specimen representing a particular type of enamel, good correlation existed between loss of gloss after the P.E.I. acid test and weather resistance.

A systematic study of simple titanium bearing porcelain enamels

By A. L. Friedberg and F. A. Petersen

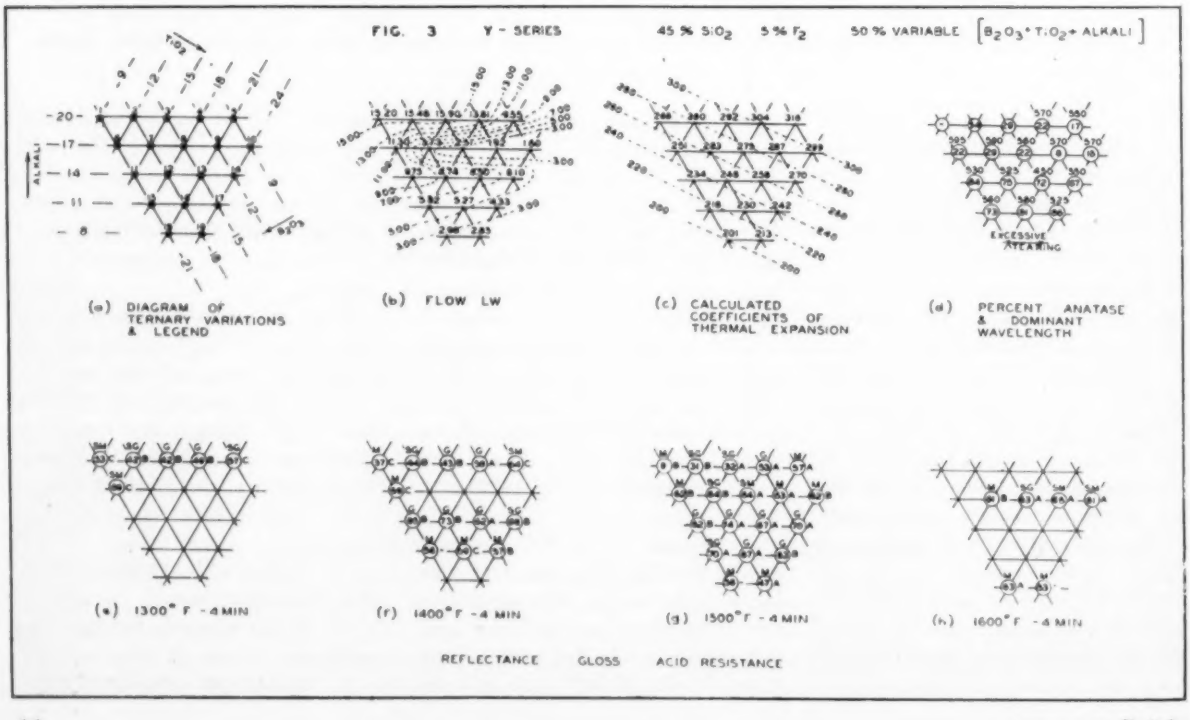
The development of titanium enamel compositions that are especially adaptable for holloware enameling was the main consideration in this study. The simplifiation of the titanium enamel formulae made it possible to make a comprehensive examination of the composition and properties of titanium enamels. The simplification of formulae was brought about by the elimination of constituents that were previously considered necessary in titanium enamel compositions. It was found that enamel properties were even improved by the elimination of the oxides of antimony, aluminum, calcium, magnesium, and zinc.

A base enamel was used which consisted of only six constituents in oxide composition. These constituents were: Na_2O, K_2O, SiO_2, B_2O_3, TiO_2, and F_2. In this study, the ratio of Na_2O to K_2O and the F_2 content were held constant. Thus, four constituents, alkali, B_2O_3, TiO_2, and SiO_2, were varied systematically and over a wide range.

The enamel properties noted included: color, flow values, expansion coefficients, per cent anatase crystals, and gloss reflectance, and acid resistance at 1300, 1400, 1500 and 1600° firing.

For good holloware white cover

to Page 46 →



Revitalized "Lo-Hi" pH

A two-stage cleaning process using a "Lo-Hi" pH bath as the first step and a "Hi" pH bath as the second (no intervening rinse) provides an improved, revitalized "Lo-Hi" pH process of cleaning, prior to vitreous enameling . . . The "Lo" pH bath combines two products in water at a pH of approximately 7.5. Designed for the removal of vegetable and animal compositions it will also remove free surface rust, activate the surface, soften scale and welded sections . . . The "Hi" pH bath involves the use of a single product at a pH of approximately 12. It removes mineral oils, activates the surface and rinses freely . . . The use of this process guarantees clean ware regardless of soil, insures complete and uniform pickling, does away with re-pickling . . . Have the NORTHWEST man in your territory tell you how to restore pre-war control, or write to us direct . . .

LO HI pH

NORTHWEST CHEMICAL CO.

9310 ROSELAWN AVE. DETROIT 4, MICH.

pioneers in pH cleaning control—serving you since '32

→ *from Page 44*

enamels, compositions exhibiting higher flow and expansion values (yet retaining the other desirable properties) were considered. From the extensive composition field representing one hundred compositions, only a small area of enamel compositions provided these properties. This area of compositions is represented by enamel Y12 which is:

Oxide		Batch	
SiO_2	45.0	Dehyd. borax	25.6
F_2	5.0	Quartz	41.7
B_2O_3	18.0	Titania	17.7
TiO_2	18.0	Soda nitre	5.7
Na_2O	10.5	Sodium silico fluoride	1.2
K_2O	3.5	Potassium silico fluoride	8.1

Compared to previously studied titanium enamels, this enamel fires at lower temperatures. It also has the desired higher flow and expansion, yet still possesses the required properties of color stability, reflectance, gloss, acid resistance, and workability.

Effects of acid treatment on abrasion and acid resistance of porcelain enamels

By W. N. Harrison, J. C. Richmond and J. R. Crandall

Recent work at the National Bureau of Standards has revealed interesting effects of acid pretreatment of porcelain enamels on the acid resistance and abrasion resistance of the treated specimens. While full explanations are yet to be determined, current interest in these phenomena warrants publication of the results so far obtained.

In the revision of the Federal Specification for enameled graduates for darkroom use, tests were made to compare the relative effects of hydrochloric, acetic and citric acids on a number of enamels. These tests indicated that acetic acid was much less corrosive than were hydrochloric and citric acids. The most significant finding, however, was that treatment with acetic acid, which produced only minor visible attack, strongly inhibited further attack upon subsequent treatment with citric acid, although the citric acid severely attacked the untreated areas of the same enameled specimens. It was found that pretreatment with acetic acid in concentrations from 0.5 to 50 per cent for periods of 5 minutes or longer were effective against subsequent treatment with 10% citric acid. Treatment with butyric acid for 15 minutes produced the same effect, but neither tartaric nor lactic acid was effective.

This passivation effect may be explained by the hypothesis that the acetic and butyric acids preferentially leach alkalies from the enamel surface, leaving behind a silica-rich film which is resistant to further solution even in citric or stronger acids. With citric acid, on the other hand, the attack apparently proceeds to a greater depth before sufficient thickness of this film is built up to inhibit further solution.

It was found that treatment for 15 minutes in 10% citric acid appreciably reduced the abrasion resistance of certain enamels having Class B or Class A acid resistance (P.E.I. standard test), this effect being more pronounced on titanium-type enamels than on antimony-type enamels. In no case was the abrasion resistance of Class AA enamels affected.

The effect of abrasion (such as would occur, for instance, when a stained spot on an enameled article is scoured) was sufficient to reduce the rating on some enamels from a good Class B by the standard test to a poor Class C by the same test modified to include the abrasion treatment. The same amount of abrasion had no appreciable effect on the untreated areas of the specimens.

It is believed that these two effects are related, and that the silica-rich layer resulting from preferential solution of the alkali is less resistant to abrasion than the original surface, although more resistant to acid attack.

The results suggest that titanium-type enamels are especially sensitive to the observed effects, and that routine inspection tests should be made in regular production to assure that the composition and processing of the enamels are maintained at optimum conditions.

The increased use of titanium-type enamels and the sensitivity of these enamels to attack by abrasion after treatment with acid indicate that an abrasion treatment should be incorporated in the standard test for acid resistance.

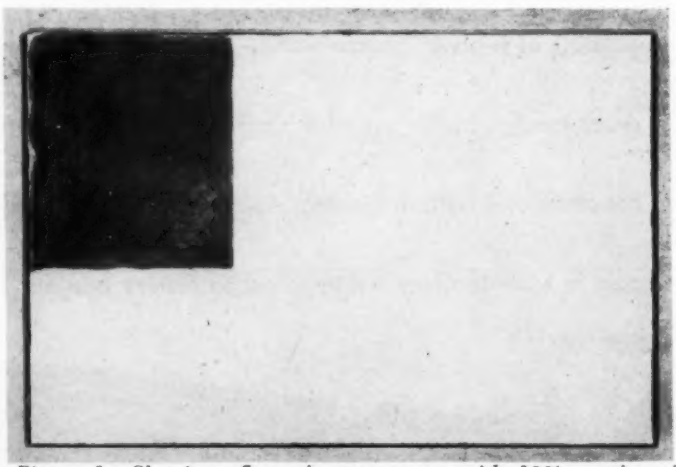


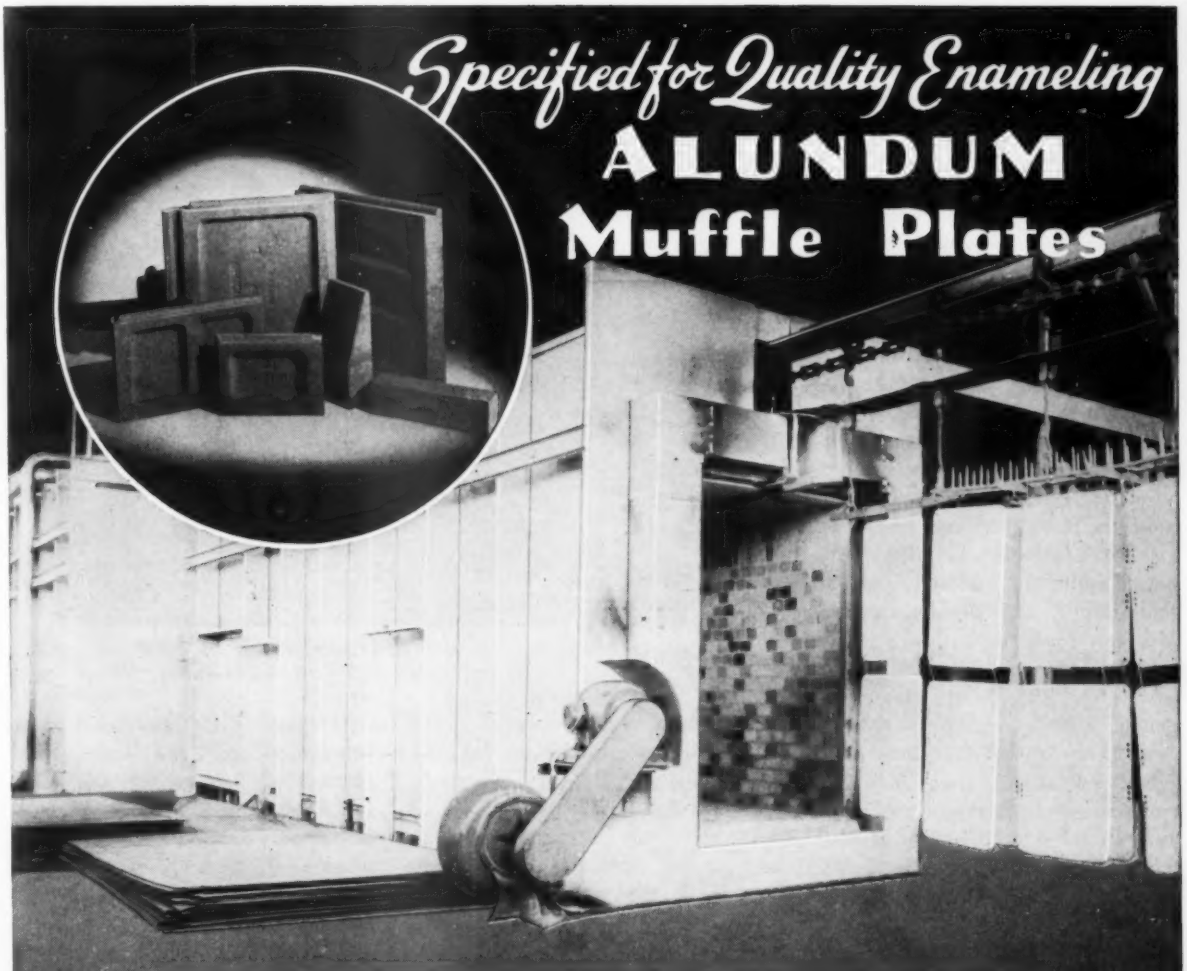
Figure 1. Showing effect of pretreatment with 10% acetic acid on resistance of enamel to subsequent treatment with 10% citric acid.

Figure 1 is a photograph of an en-

to Page 48 →

Specified for Quality Enameling

ALUNDUM
Muffle Plates



ALUNDUM Muffle Plates by Norton Company have been specified in Ferro Enameling Furnaces for more than a quarter of a century as essential equipment for quality enameling. Made of electrically fused alumina plus a highly refractory bond, ALUNDUM Muffles possess great refractoriness, chemical stability, physical strength and excellent heat transfer properties. Their strength permits thin cross-section for rapid passage of heat. They will give long, trouble-free service in either intermittent or continuous furnaces.

NORTON COMPANY, Worcester 6, Massachusetts

NORTON Longer Lasting **REFRACTORIES**

→ *from Page 46*

ameled specimen showing effect of pretreatment with 10% acetic acid on resistance of the enamel to subsequent treatment with 10% citric acid.

The 4" x 6" specimen was immersed on edge in 10% acetic acid to a depth of approximately 1½ inches across its lower half, and allowed to remain for 15 minutes. It was then removed, rinsed, dried and given a similar treatment in 10% citric acid across its left end. The specimen was then marked with a No. 1 lead pencil over its entire surface, and rubbed with dry and wet towels to accentuate the contrast between the etched and unetched areas. The dark area (upper left) was treated with citric acid only, and was badly etched, while the areas treated with acetic acid only (lower right) and with acetic acid followed by citric acid (lower left) showed very slight etching when compared to the untreated area (upper right).

Figure 2 is a photograph of an enameled specimen showing effect of pretreatment with 10% citric acid on resistance of the enamel to subsequent abrasion.

The 4" x 6" specimen was immersed on edge to a depth of approximately two inches in 10% citric acid and allowed to remain for 15 minutes. It was then removed, rinsed, dried, and abraded by hand across its entire width in the area shown, about ½ in. wide. The specimen was then marked with a No. 1 lead pencil over its entire surface and rubbed with wet and dry towels to remove the marking where not tightly held, thus accentuating the contrast between the abraded and unabraded areas.

The etched (bottom) half of the specimen retained a small amount of graphite in the unabraded areas, but the abraded area in the etched portion of the enamel was badly damaged, while the same amount of abrasion produced practically no effect on the unetched portion of the specimen.

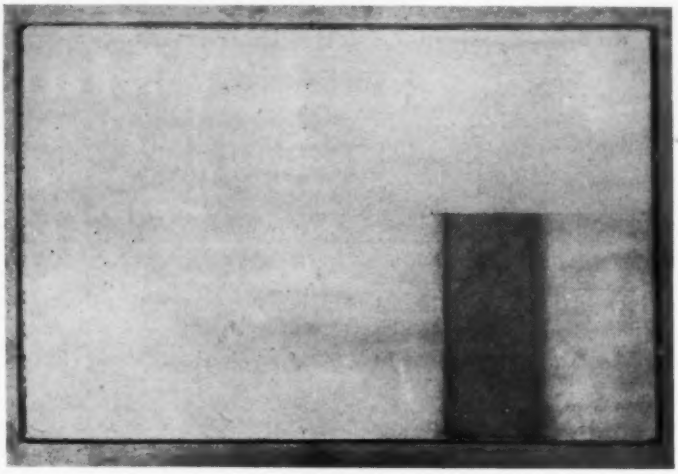


Figure 2. Showing effect of pretreatment with 10% citric acid on resistance of the enamel to subsequent abrasion.

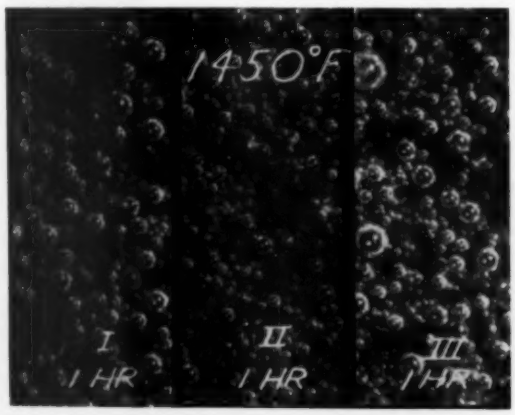
Observations on the bubble structure of ground coat enamels

By Alexis J. Hannan, Jr.

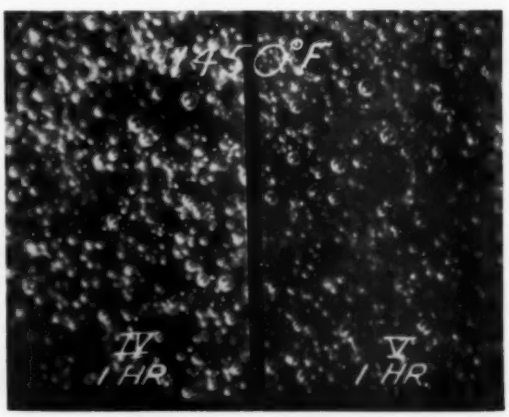
During the past three years changes of an almost revolutionary nature have taken place in ground coat enamels. Both maturing time and maturing temperatures have been radically reduced. This paper is concerned with a study of the effects of these changes on the bubble structure of ground coat enamels, especially with regard to a comparison of the effects of clays and mill additions upon the bubble structure of ground coat enamels of various types.

The electrolytes and clays behave in a similar manner in 1350°, 1450°, and 1550° F. ground coats. Due to inherent physical properties of the frit, the bubble size is different for the three temperatures; but relatively speaking, the electrolytes and clays behave in an identical manner at each temperature.

Figures 1 and 2 show the effect of various electrolytes on the bubble



Effect of various electrolytes on bubble structure of 1450° F. ground coats before aging is shown in Fig. 1, left, & Fig. 2, right.



structure of 1450° F. ground coats before aging. In each case, the frit, clay, and feldspar were held constant while the electrolyte varied.

Enamel I	— Borax	8 oz.
	Nitrite	2 oz.
Enamel II	— Nitrite	4 oz.
Enamel III	— Borax	8 oz.
	$MgCO_3$	8 oz.
Enamel IV	— $MgCO_3$	8 oz.
Enamel V	— Bentonite	2 oz.

From this work we were able to draw the following conclusions:

(1) Different electrolytes have a marked effect on the bubble structure of ground coat enamels.

(2) Borax produces a comparatively large bubble structure which increases at a moderate rate with aging.

(3) Magnesium carbonate will stabilize bubble structure except in the presence of an excess of sodium ions.

(4) Sodium nitrite produces small bubbles initially which increase in size rapidly as the enamel ages.

(5) The electrolytes appear to have a greater effect on bubble structure than does frit composition, providing the enamel is properly fired.

(6) Clays will affect the bubble structure of an enamel, depending upon the amount of gases they evolve during firing.

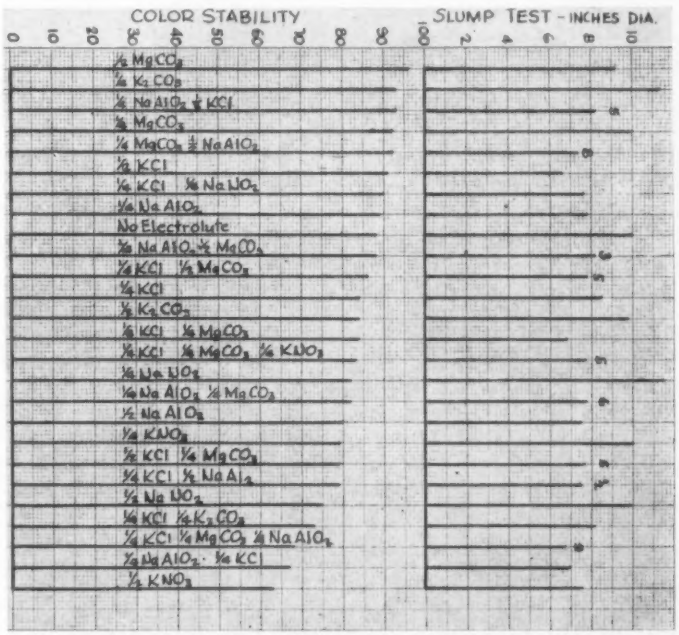
(7) It is possible to control the bubble structure of any type ground coat with a proper balance of electrolytes and clay, providing each enamel is treated individually according to inherent physical properties.

Effect of some electrolytes on the color value of enamels made from a standard titania-opacified frit

By E. E. Marbaker, H. S. Saunders and L. H. Baumer

Just as the color value and acid resistance of titania enamels are influenced by the clay used as the suspending agent in slip preparation, so it was thought that the salts used as electrolytes also might have effects of a similar nature. Six salts, KCl, K_2CO_3, $NaAlO_2$, $NaNO_2$, $MgCO_3$, and KNO_3, more or less commonly used as electrolytes for setting up titania enamels, were employed singly and in combinations of two and three in the preparation of 25 slips from a standard frit. Clay content was constant, as were all the milling conditions. Slips, therefore, which varied only in electrolyte content were sprayed on ground coated steel plates, which were then fired uniformly. The set of the slips was determined by means of the Irwin Slump Test and the Brookfield viscosimeter. The reflectance, color value, and acid resistance of the enamels after firing for 3 minutes at 1500° and 1520° F. were determined by standard methods. Color value was determined from the formula $\frac{B-A}{G} \times 100$ in which A, B, and G are the reflectances obtained with amber, blue, and green filters.

In order to obtain a better standard of comparison, the ratio between the color values at 1500° and at 1520° F. was determined for each electrolyte to show the trend toward yellowness caused by firing at the higher temperature. This was called the color stability factor and it was found to vary over a wide range as shown graphically in the accompanying chart, in which the electrolytes are arranged in the order of decreasing color stability and so grouped that the effects of each salt alone and in various combinations can be directly compared. In the upper section of the graph, the result of each slump test is shown in order that all the factors necessary for the selection of an electrolyte may be considered. Here it is seen that while the best color stability was produced by ½% $MgCO_3$, the set was not quite sufficient. The best combination of set (although it was too high and pyro had to be used as noted) and color stability for the particular frit used in the study was shown by the combination of ¼% $NaAlO_2$ and ½% KCl.



This graph shows the arrangement of the electrolytes in the order of decreasing color stability.

The acid resistance of the enamels appeared to be unaffected by the electrolytes, except in a few cases where the set was obviously insufficient. It was concluded that the character of the clay is a more important factor in relation to acid resistance than is the composition of the electrolyte.

The results showed that electrolytes have more effect on enamel properties

than has commonly been supposed. In the preparation of enamels, not only the quality of the frit but also the effects of the components of the mill addition, clay and electrolyte alike, merit careful consideration in order to insure the production of the best possible results.

Factors influencing the oxidation of iron in the firing of ground coat enamels

By Robert F. Kimpel and Ralph L. Cook

The oxidation of the iron beneath a ground coat enamel was measured by recording the progressive weight change with a sensitive balance upon heating a specimen from room temperature to 1550° F. and correcting for the volatile constituents. Specimens were suspended from the arm of the balance by a platinum wire in an electric pit furnace which heated to 1550° F. in 45 minutes. The effect of such variables as clay, metal treatment prior to coating, nickel flashing, and enamel maturing temperature were investigated in this manner.

The relative permeability of dried enamel films was correlated with such variables characteristic of ground coat enamel slips as fineness of grinding, clay, specific gravity, and the weight of application and drying temperature of coated specimens. The method for determining the relative permeabilities of thin films consisted of plotting the time required for passage of air through the specimens into an evacuated tanks against the corresponding rise in the pressure in the tank. The different clays caused the greatest change in the permeability of the unfired films in which ball clays gave less permeability than the kaolin clays. There was no significant difference in the permeability of such films when they were made with frits of fineness from 2.7 to 17%.

The results showed that the permeability of the unfired coating was not an index to the amount of oxidation which occurred when the coating was fired on iron. The oxidation studies indicated that:

1. A kaolin clay in an enamel slip allowed less total iron oxidation than did a ball clay, since the latter clay allowed a more permeable coating to develop between 900° F. and its fusion temperature believed due either to the organic material or the free silica content of the ball clay.

2. The nickel deposited on the iron by nickel flashing caused an appreciable decrease in the total amount of iron oxidation, when compared to non-nickel flashed iron, due to the formation of a protective film of NiO from the oxidation of the nickel between about 950° and 1100° F.; the iron and nickel underwent oxidation simultaneously.

3. With low temperature ground coats, the rate of metal oxidation was the same as with conventional ground coats, but due to the lower fusion temperature the total amount of oxidation was considerably less than with regular ground coat enamels.

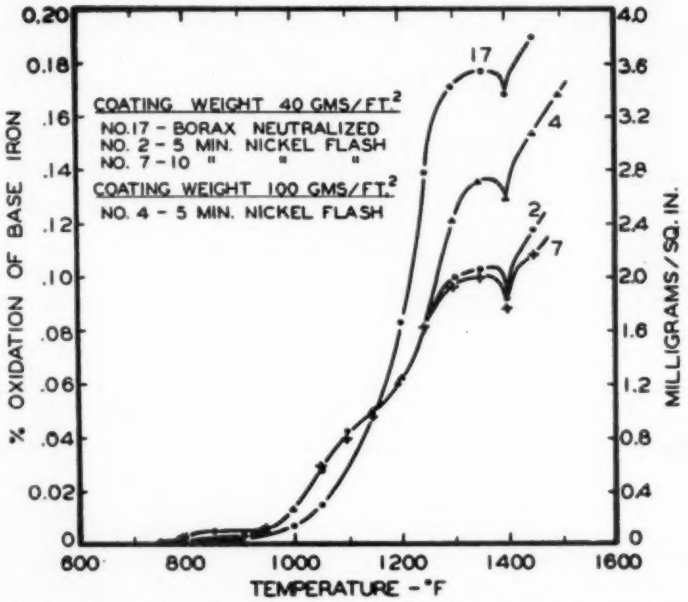


Chart shows the effect of nickel flashing and weight of coating application upon the oxidation of coated enameling iron.

Study of electroplated coatings on steel with respect to their effect on the adherence of vitreous enamels

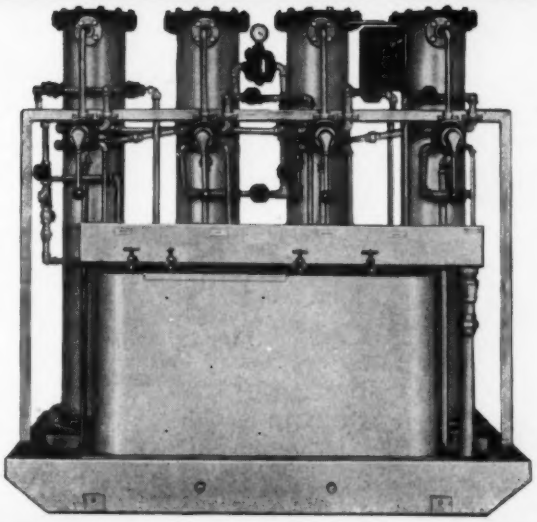
By V. D. Frechette, D. Weintraub and Bernard Schwartz

Experiments were undertaken using 20 gauge enameling iron and 18 gauge titanium bearing steel with standard frits, including a ground coat based on equal amounts of soft and medium ground coats, titania cover coats and zircon cover coats. Preparation of the iron included the use of an alkaline cleaner followed by an acid pickle and cyanide neutralizer. Lead was plated on a series of these blanks in amounts up to .4 grams per square foot and antimony was plated on another set in amounts varied up to 6½ grams per square foot, using a range of current densities to produce surfaces of various degrees of compactness. Only half of each specimen was so plated so that each provided a convenient reference blank to assist later in the comparison of adherence characteristics. The enamels were applied by spraying in five groups—those with the ground

For

Mill Room ASSURANCE That the "SLIP" is Always RIGHT

INDUSTRIAL'S NEW WATER DEMINERALIZERS



These ion-exchange demineralizers deliver the chemical equivalent of distilled water by simply passing water through ion-exchange resins. All dissolved mineral salts are removed without the use of any stills, heat, or steam. No cooling water is required and there are no scale formations. And the cost of this demineralized water is only a few cents per 1000 gallons compared to the several dollars for distilled water or steam condensate.

Model L-200 Four-Bed Industrial Water Demineralizer for a nominal flow rate of 200 gph. Other standard models available with capacities of 5 to 1000 gph. Special units of any capacity engineered to requirements.

For

Dependable Results in Solution Clarification

INDUSTRIAL'S FILTERS AND FILTERING SYSTEMS

In production filtration here are some points to check. Compare these construction and operating features of Industrial's filters.

Industrial's filters are conservatively rated on capacity. Compare the filtration area, the sludge holding capacity of the filter chamber, and the pump characteristics. All these factors govern the capacity of the filtering system. The filter cloths in connection with filter aids provide efficient, low-cost filtration in either continuous or intermittent service.

The air wash cleaning feature does not require any dismantling of the filter or removal of the cover. Industrial's filters have operated for months without opening—opening is required only for replacing filter cloths or for periodic inspection. This feature is a great time and labor saver.

A typical Industrial Stationary Filter System. Standard models—portable and stationary types—are available in capacities of 100 to 15,000 gph. Special filters are engineered to meet unusual requirements.

★ *Write for full information and recommendations*

INDUSTRIAL FILTER & PUMP MFG. CO.

1627 West Carroll Avenue • Chicago 12, Illinois

FILTERS
Pressure Type

PUMPS
Centrifugal

CORROSION TESTING APPARATUS
Salt Fog
Humidity

RUBBER DIVISION
Vulcanized Linings • Molded Products

WATER DEMINERALIZERS

He started retiring today!

...and it feels good!

It's going to take time, but the point is . . . he's taken that all-important *first step* . . . he's found a way to make saving a sure, automatic proposition . . .

He's buying Savings Bonds, the safest investment there is, through the Payroll Savings Plan!

This makes saving an absolute certainty! You don't handle the money to be invested . . . there's no chance for it to slip through your fingers and . . . U. S. Savings Bonds pay you *4* dollars for every *3* invested, in ten years!

Think it over! We believe you'll agree that bonds are the smartest, surest way there is to save.

Then—sign up for the Payroll Savings Plan yourself, today! Regardless of your age, there's no better time to start retiring than *right now!*

P. S. If you are not eligible for the Payroll Savings Plan, sign up for the Bond-A-Month Plan at your bank.

Automatic saving is sure saving—U. S. Savings Bonds

Contributed by this magazine in co-operation with the Magazine Publishers of America as a public service.

coat alone, those with titania cover coat and zircon cover coats alone, and each of the cover coats applied over the ground coat.

The results may be summarized as follows:

(1) Under the conditions of test the titania cover coats had slightly better adherence than the zirconia.

(2) Lead plating the steel decreased the adherence of all the enamels and on both steels.

(3) The antimony plating resulted in improved adherence in every case.

(4) Both titania and zircon cover coats rated adherence equal to the ground coats when applied over an antimony plating of 5½ grams per square foot or over *and not critical.*

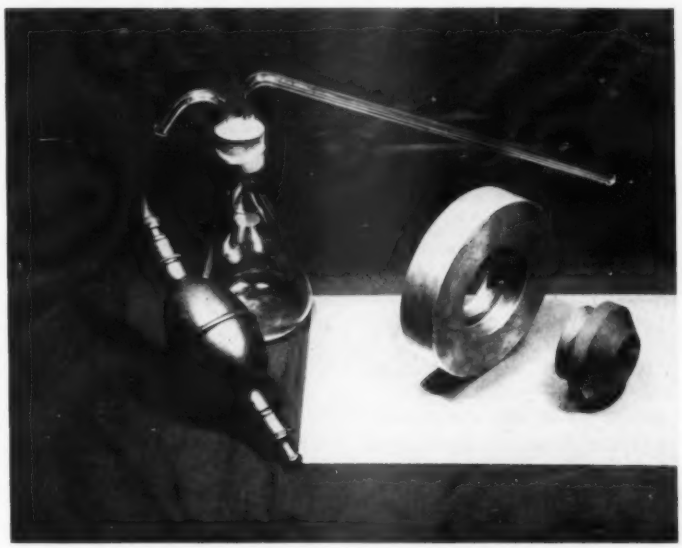
(5) No correlation was found between the rate of plating of the metal and the adherence of the enamel.

Excerpts from Division paper.

A rapid control method for nickel coatings on enameling iron

By L. C. IKENBERRY AND J. J. CANFIELD

For some time there has been a need for a rapid control method for the determination of nickel on iron surfaces treated for enameling. This thin coating results from the nickel flashing operation by chemical displacement and appears to improve the attachment of the porcelain enamel.



This unassembled rubber ring and suction apparatus is part of equipment used in the photometric method of determination of nickel.

The methods previously used for the determination of nickel required considerable time. This has made it difficult to control the amount of nickel closely on the treated surface since the nickel on the ware may vary because of such things as conditions of the flashing solution, the metal, and plant practices.

A rapid photometric method has been found for the determination of nickel, which should make it easy to control the nickel flashing operation. It is unique in that the nickel coating may be dissolved and removed from an area confined by a weighted rubber ring on the metal surface.

The rubber ring was made from molded soft rubber tubing 1.35 inches inside diameter having a wall thickness of 0.5 inches. The rubber ring was beveled at 45 degrees to make a small contact area with the metal surface. This gave an area within the ring of 1.44 square inches or 0.01 square feet. A metal ring weighing about 3½ pounds was used to hold the rubber ring tightly to the metal surface. Another size rubber ring may be used if found more convenient.

The amount of nickel present may be readily obtained in the following manner:

Dissolve the nickel coating from the area inside the rubber ring with a few ml. of dilute (1:1) HNO_3. Wash with a little dilute HCl and water. Remove the sample and washings by suction into a marked Erlenmeyer flask. To the flask add 30 ml. of concentrated NH_4OH, 10 ml. of a 20% solution of ammonium persulfate and 5 ml. of 1% dimethylglyoxime in denatured alcohol and dilute to 200 ml. Filter a small portion and measure the amount of nickel by the depth of color, preferably with a photoelectric photometer.

Due to the speed with which the nickel can be removed from the metal surface, combined with no necessity for heating the solution, it is possible to determine the weight of nickel coating in less than 5 minutes.

It was also found that reasonable variation in the amount of reagents used as well as slight changes in temperature did not greatly effect the accuracy of the results.

Consistent values were obtained by the rapid method on samples which had previously been tested by the gravimetric method. For example, on a sample containing .10 grams of nickel per square foot of surface, the standard deviation was such that 99.7% of the time the values obtained should be within the range of .092 to .108 grams per square foot when determined on such a sample.

the authors

Leon N. Baumer, The O. Hommel Company, Pittsburgh, Pa.

E. E. Bryant, Ferro Enamel Corporation, Cleveland, Ohio.

J. J. Canfield, Armco Steel Corporation, Middletown, Ohio.

Ralph L. Cook, Department of Ceramic Engineering, University of Illi-

nois, Urbana, Illinois.

J. R. Crandall, National Bureau of Standards, Washington, D. C.

V. D. Frechette, New York State College of Ceramics, Alfred, N.Y.

A. L. Friedberg, Department of Ceramic Engineering, University of Illinois, Urbana, Ill.

Lee R. Fuller, Pemco Corporation, Baltimore, Md.

D. R. Goetchius, Ferro Enamel Corporation, Cleveland, Ohio.

Alexis J. Hannan, Jr., Pemco Corporation, Baltimore, Md.

W. N. Harrison, National Bureau of Standards, Washington, D. C.

L. C. Ikenberry, Armco Steel Corporation, Middletown, Ohio.

Floyd H. Kahler, Illinois Water Treatment Co., Rockford, Ill.

E. E. Marbaker, Mellon Institute, Pittsburgh, Pa.

F. A. Petersen, Department of Ceramic Engineering, University of Illinois, Urbana, Ill.

J. C. Richmond, National Bureau of Standards, Washington, D. C.

Hollis S. Saunders, The O. Hommel Company, Pittsburgh, Pa.

Bernard Schwartz, New York State College of Ceramics, Alfred, N.Y.

Ben J. Sweo, Ferro Enamel Corporation, Cleveland, Ohio.

John F. Wantz, Illinois Water Treatment Co., Rockford, Ill.

D. Weintraub, New York State College of Ceramics, Alfred, N.Y.

Robert F. Kimple, Department of Ceramic Engineering, University of Illinois, Urbana, Ill.

The authors' resumés of papers presented to the Enamel Division at the American Ceramic Society meeting are presented in accordance with the publication policy of the American Ceramic Society. Complete papers will be published in the Journal of the A.C.S., the A.C.S. Bulletin, or in other industry publications as released by the Society.

Interesting comments on SAFE TRANSIT program

(Continued from Page 35)

"When the Safe Transit program is completed, all transportation agencies, each with its own special measures for better handling of products finished in porcelain enamel, will be included, and attention will be given to truck and carloading methods, and the avoidance of damaging shocks in the manual handling of individual pieces.

"The necessity for research, improvement, knowledge of what to do and how to do it — and getting the job done properly rests as importantly with the carrier as with the shipper. More shippers complain about rough handling of cars in switching than about any other deficiency of rail service. We know about the employee-training programs that are being carried on, the use of instruction cars, posters, impact registers by the hundred, and all that sort of thing. No doubt those efforts are doing a lot of good. But the woeful fact is, the rough handling continues, and is resulting in heavy losses for the railroads, and much inconvenience and disappointment for receivers. If there is any one thing I would like to stress — and urge upon the operating and claim-prevention departments of the railroads — it is the need for action which will really get results in this matter of rough handling. *(This points to Project II — Safe Transit Program)*

"When one of us acts for correction, remember benefits are reaped by all three parties — the shipper, the receiver, the carrier. The financial stake is a large one. The goal is worthy of the best efforts of all."

Wolfert heads Seeger research department at Evansville

John W. Krueger, vice president of Evansville Division of Seeger Refrigerator Co., has announced that Edward R. Wolfert, formerly manager of the electric appliance engineering department at East Springfield Works of Westinghouse Electric Corp., joined the Seeger Evansville (Ind.) staff as manager of the engineering and research department, on May 2.

Wolfert had been connected with Westinghouse since 1923, having been manager of the electric appliance engineering department for the past seven years with direct responsibility over the design of electric refrigerators and many other appliances for home and commercial use. The report indicates extensive experience in the designing of feeder regulators, compensators, small transformers, relays, electronic devices, telemetering, air conditioning equipment, and many other electrical appliances.

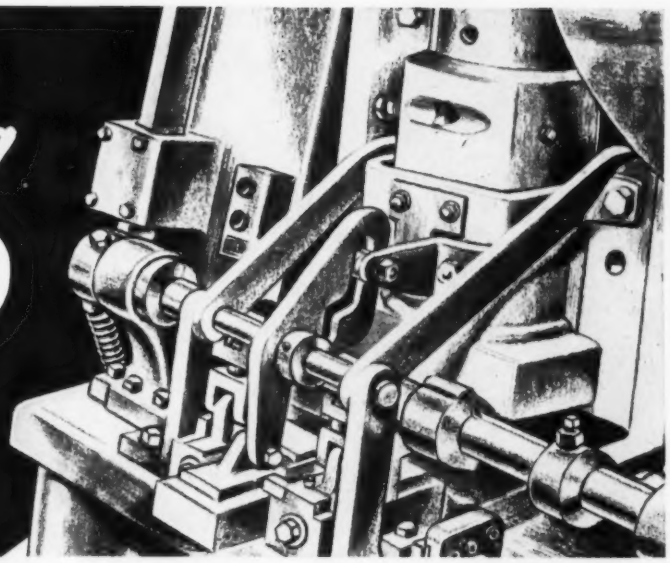
Wolfert was the recipient of the Westinghouse Order of Merit as well as the Modern Pioneer Award, granted to 500 outstanding inventors in the United States. He was selected as one of the country's Modern Pioneers at the same time as the selection was made of Mr. Kettering, of General Motors, and Mr. Garand, of Garand Rifle fame.

American Cyanamid appointments

The appointments of C. F. Bonnet as production manager, and G. W. Russell as assistant sales manager, has been announced by the Industrial Chemical Division of American Cyanamid Company.

Bonnet, with Cyanamid for more than 15 years, formerly served as assistant general sales manager of the division. Russell was manager of the new product development department, prior to his new appointment, and in his new capacity will take over the sales duties previously handled by Bonnet.

this was a GOOD IDEA



and it Went Over with a BANG

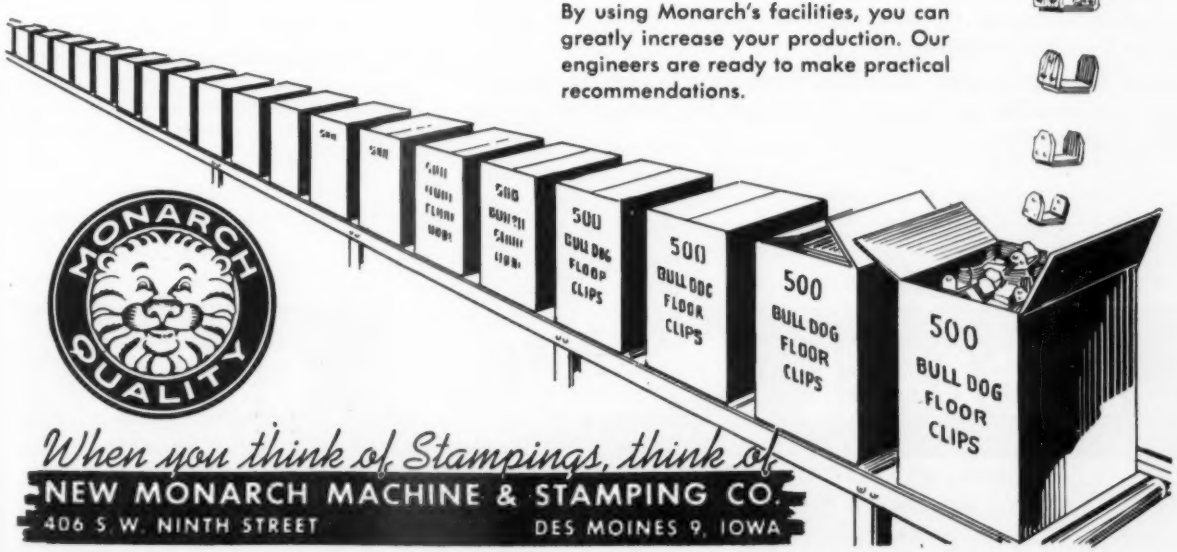
FOR THE BULL DOG FLOOR CLIP COMPANY

But it was the precision tooling and the building of fully automatic press facilities of the New Monarch Company which made possible the vast economical production program of this nationally used item.

Because we are constantly improving our manufacturing methods, we are now producing, IN A SINGLE OPERATION, stampings for the Bull Dog Sleeper Anchor Floor Clips which originally required 7 separate operations. As a result, production has run into many millions of these stampings.

Bull Dog Stampings are but one of the many completely packaged items being produced by the New Monarch Company. Complete from blueprint to shipping carton, each of these items is manufactured, ready for national distribution — a most economical and convenient service, highly cherished by our many satisfied customers.

By using Monarch's facilities, you can greatly increase your production. Our engineers are ready to make practical recommendations.



MONARCH QUALITY

When you think of Stampings, think of

NEW MONARCH MACHINE & STAMPING CO.

406 S.W. NINTH STREET DES MOINES 9, IOWA

The approaching weeks mark a normally slack season for industry. Vacations and "long weekends" will interfere with production. Orders will decline.

The natural inclination during such lulls is to take things easy around the plant. But alert manufacturers will recognize this period as an ideal time for *work—maintenance work.* They will be readying their mills and machines for the heavier schedules to come.

These coming weeks will be an ideal time in which to re-line your mills with McDanel Mill Lining Brick.

McDanel Brick are *extra-fired* to give longer, better service. Over the years, they've proved their ability to take long, hard campaigns.—to boost production by lengthening the time between re-linings.

Line your mills now with McDanel Mill Lining Brick and *be prepared* to get speedy, prolonged production when the heat is on again!

*** HAND ROLLED GRINDING BALLS**

Made from specially developed vitreous porcelain body and hand rolled for faster, uniform grinding. Mill tested and individually inspected before shipment to you.

*** MILL LINING BRICK**

Low in glass content, McDanel Mill Lining Brick gives maximum resistance to wear and long, satisfactory service. Complete size range to fit every size mill.

*** MILL HEAD ASSEMBLIES**

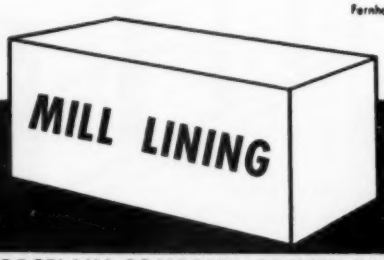
Be sure to specify McDanel Mill Head Assemblies on your new mills. No metal can contaminate your mill charge with these patented covers. They are tops for uniformity of batch and long service.

*** METAL COVERED GRINDING JARS AND MILLS**

Protected with heavy gage steel jacket McDanel Metal Covered Grinding Jars and Mills are easy to handle, easy to clean, discharge rapidly and stand up under long usage.

West Coast Representative
Fernholtz Machinery Company, 150 N. Norton Ave., Los Angeles, Calif.

Specify



McDANEL BRICK

McDANEL REFRACTORY PORCELAIN COMPANY, BEAVER FALLS, PENNSYLVANIA
Chicago Vitreous Enamel Product Company, Cicero 50, Illinois
Exclusive Representative for the Enameling Industry

NEWS

Youngstown earnings rise

Net earnings of The Youngstown Sheet and Tube Company for the first quarter this year were $10,022,660, compared with $6,423,566, for the same period last year, according to a company quarterly report. Net sales and other revenues increased from $88,033,031 last year to $106,574,356 for the first quarter this year.

Clyde Porcelain officers announced

Thornton E. Stokes was named executive vice president of Clyde Porcelain Steel Corp., Clyde, Ohio, at a meeting of the board of directors held recently. In this capacity he will be managing head of the corporation, the board having deferred naming a president.

Other officers of the firm, all reelected, are: R. Wade Willey, vice president and general manager; Edwin Williams, vice president; W. F. Miller, secretary; and I. G. Boyer, treasurer.

Wooldridge named manager of sales training for U. S. Steel

Charles L. Wooldridge, Jr., staff assistant to the vice president—sales, has been appointed manager of sales training for United States Steel Corporation of Delaware. Before joining U. S. Steel in 1946, he had served 11 years with the Jam Handy organization in New York and Detroit. He wrote and produced sales training material and visual selling aids for Jam Handy and assisted in the development of sales meeting and conventions.

Research manager appointed to Foote Mineral board

Dr. S. C. Ogburn, Jr., who joined Foote Mineral Company of Philadelphia last year as manager of research and development, was appointed a director of the firm at a recent stockholders meeting. Dr. Ogburn will continue to head Foote's research and development program.

Dr. Ogburn formerly was associated with Pennsylvania Salt Mfg. Co., in Philadelphia, as manager of research and development.

Household washer factory sales advance—March sales exceed highest prewar month

Continuing their recovery from a sharp downturn registered late in 1948, factory sales of standard-size household washers in March totalled 254,300 units, compared to 117,900 in January and 208,500 in February, according to industry-wide figures announced by the American Washer and Ironer Manufacturers Association. The March total compares to 213,862 in July, 1941, the industry's highest prewar month, but is 37.7 per cent below sales of 408,512 units in March, 1948.

Florence names purchasing agent

Richard L. Morley, formerly assistant puchasing agent, has been appointed purchasing agent for Florence Stove Company's Gardner (Mass.) plant, it was announced by Myron E. Vaughn, director of purchases. Associated with Florence Stove for the past 13 years, Morley replaces Ivan C. Wink, who resigned recently.

Large market for steel kitchen cabinets

"Potential sales in the steel kitchen cabinet business for the next decade are enormous. Up to now, we have only scratched the surface," was the tip to plumbers from S. S. Keeney, executive secretary of Steel Kitchen Cabinet Institute, at the 26th annual convention of the Virginia Associated Plumbing and Heating Contractors, March 29, at Roanoke, Va.

Color council for homefurnishings formed to report color trends

In order to help the homefurnishings industry solve some of its most perplexing color problems, a "Color Council for Homefurnishings" is being formed by a group of representatives from manufacturers, manufacturers' consultants and retailers.

The primary objective of the Council is to help homefurnishings and housewares companies to satisfy the current demands of American women for color harmony in the home, the report states. Members will meet periodically to report to the trade on color trends so that manufacturers and retailers will be enabled to: (1) increase the consumer color appeal of specific merchandise lines, (2) improve the harmonious quality of

colors produced in varied lines, (3) train sales personnel in the understanding of contemporary color, (4) simplify color coordination problems of the woman shopper at point-of-sale, and (5) reduce the capital risk in inventories of colored merchandise.

An early result of the Council's work will be a "Homefurnishings Palette for 1949-1950," which will be prepared for distribution prior to the market opening.

It is stated that the Council will welcome other persons in the industry, or allied merchandise fields, who are vitally interested in color problems as applied to homefurnishings and housewares. All inquiries regarding the work of the Color Council for Homefurnishings should be addressed to the Council, c/o *finish*.

Plumbing industry near its goal of national uniform code

A uniform national plumbing code is on the way, according to Plumbing and Heating Business, a trade paper. Arrangements are now being made for a conference of the five national organizations which have been at work on plumbing codes. The initiative in calling the meeting of all interested groups is being taken by the American Standards Association and the U. S. Department of Commerce.

Represented at the conference to develop a national uniform plumbing code will be consumers, the government, public health authorities, plumbing inspectors, building officials, water works departments and utilities, engineers, labor, plumbing contractors, and others.

Maumee Malleable Castings announces promotions

Four promotions in the management of Maumee Malleable Castings Co. to broaden the activities of the company's Toledo (Ohio) plant and of the plants of recently acquired subsidiaries in Milan, Michigan, have been announced by Charles Fruchtman, president.

E. H. Doering was named executive vice president; N. P. Mahoney promoted to plant manager at Maumee Malleable; R. E. Bossert appointed sales manager; and H. M. Breese named secretary in addition to being treasurer and purchasing agent. Other officers of the company are Leonard Fruchtman, Irwin Fruchtman and Chester Devenow, vice presidents.

One subsidiary company in Milan, American Furnace and Foundry Co., assembles and markets a complete line of heating furnaces for homes and factories.

Tinnerman Products, Inc. has opened a new sales branch office in Kalamazoo, Mich., according to H. R. Russell, general sales manager. The new office will be managed by Harry J. Greer. Location is 212 Dewing Bldg., 132 No. Burdick Ave.

Odin Stove celebrates 50th anniversary; to manufacture both gas and electric ranges

The Odin Stove Manufacturing Co., of Erie, Pa., through its president, C. H. Hoffstetter, is announcing a new line of "Beautyrange" domestic ranges in celebration of half a century in production of gas ranges for the home. In addition, announcement was made that for the first time the company is this year announcing a completely new line of domestic electric ranges.

The new 1949 line of gas ranges, Odin's 50th anniversary models, has, according to the report, been released to Odin dealers across the country. The company has not yet revealed the special features or physical details of the new electric models.

DuPont to build $2,000,000 finishes research laboratory

Plans to build a $2,000,000 finishes research laboratory in Philadelphia, Pa., were announced recently by the DuPont Company. James B. Bullitt, director of the laboratory, said that construction would begin soon, and

it is expected that the building will be ready for occupancy late in 1950.

The new facilities will be for research and development in the field of enamels, paints, varnishes, synthetic resins, and other finishing materials. The new laboratory also will be available for users of DuPont finishes who desire to solve actual production problems, the report states.

National home laundering week June 6 to 13

The washer, dryer, ironer industry's nationwide promotion, designed to center attention on the three products, emphasizing the American Washer and Ironer Manufacturers Association' slogan, "For Family Washing, There's No Place Like Home," gains momentum as the $10,000 prize event draws near.

June 6 to 13 is the date for National Home Laundering Week. It is the revival of a prewar event which aroused countrywide interest in 1938, 1939 and 1940. Each year produced record sales of home laundering equipment, deferred a seasonal downturn, and stimulated sales for weeks following the nationwide promotion week.

Special prizes for factory and distributor salesmen now will go to those who line up the greatest number of dealer display windows. Windows need contain any two of the industry's three products, instead of all three as first stipulated. United States savings bonds, $10,125 total maturity value, are the prizes.

Dealer contestants will use a colorful window strip incorporating AWIMA's slogan. Strips and tie-in logotypes will be supplied dealers. Special advertising material is on its way to the local display advertising manager of every daily newspaper in the United States to aid him in promoting tie-in pages to special sections by his hometown advertisers. Special scripts will tell radio listeners from coast to coast what it's all about.

Lever Brothers Company, always an ardent supporter of AWIMA's big promotion event, gets behind it now with this superprogram: a full-page color advertisement in the *Ladies' Home Journal* for June; a double-truck in *Electrical Merchandising;* a strong commercial on the' Amos 'n' Andy broadcast May 29; distribution of 1000 of AWIMA's window materials; a special mailing to approximately 15,000 key dealers and distributors as a further message about National Home Laundering Week.

Pennsalt elects officers

George B. Beitzel has been elected president of Pennsylvania Salt Mfg. Co. on the eve of the firm's 100th anniversary year. The newly elected president joined the company 19 years ago and since January 1 served as executive vice president.

Leonard T. Beale, president for the past 20 years, will continue with the company as chairman of the board.

At its annual meeting, held in Pennsalt's executive offices in Philadelphia, the board also elected William P. Drake as vice president in charge of sales, and William F. Mitchell as vice president in charge of manufacturing.

Since 1863, Pennsalt has maintained an unbroken quarterly dividend record and is reported to be the only manufacturing company in the United States listed on the New York Stock Exchange which can point to this achievement.

Two changes at Industrial Filter

Jack F. Brossart, until recently general sales manager of Industrial Filter & Pump Mfg. Co., Chicago, Illinois,

Harold Faint

has been appointed Pacific Coast manager of the company. Harold W. Faint, who has been with the company since 1945, and recently manager of the Ion Exchange Department, has been appointed general sales manager, succeeding Mr. Brossart.

Jack Brossart

Make the convention pay — theme of ICHAM meeting

More than five hundred stove men and suppliers who attend the Mid-Year Meeting (June 6, 7 and 8) will be serious in their desire to get a maximum return on their expenditures of time and money in making the trip to Cincinnati. They expect to earn dividends by being represented at each of the twenty scheduled meetings where mutually frank exchanges of ideas and experiences may provide some of the answers to the questions of the day —

How much is the national economic picture going to change in 1949, and where will the stove industry fit into that picture?

How can we show distributors, dealers, and consumers that a modern cooking or heating stove is a good investment at today's prices?

How can a stove company effect

practical cost reductions and lower its break-even point under present market conditions?

How can sales and merchandising programs be revitalized to assure this industry a continuously growing market?

In addition to the Management Forum, product and specialists' meetings, there will be a General Session at which two prominent speakers will appraise business prospects for the second half of 1949.

Philco refrigerator sales up

Sales of Philco Corporation in the first quarter of 1949 were $53,006,000 as compared with $58,661,000 in the first quarter a year ago, it was announced by William Balderston, president.

"In the first quarter of 1949, sales of our refrigerator division were well ahead of a year ago, and our new models have enjoyed an enthusiastic reception at the hands of the public," Mr. Balderston pointed out. "At the same time, sales of many of our other products declined substantially in line with the experience of the appliance industry generally since the latter part of 1948."

L. A. Perry was recently appointed sales engineer of Locke Incorporated, and will work as a member of the northeastern sales region, according to E. M. Haines, vice president of marketing. Perry formerly was in the distribution materials division in Locke's general office in Baltimore.

Kaiser Fleetwing to get largest electric counterflow porcelain enameling furnace ever built

Two porcelain enameling furnaces, one of which will be the largest electric counterflow type ever built, recently were purchased by Kaiser Engineers, Inc., of Oakland, Calif., for installation this summer in the Kaiser Fleetwing plant in Bristol, Pa. These furnaces will be used to porcelain enamel bathtubs and kitchen sinks.

The larger of these furnaces, both of which were manufactured by General Electric, is rated 1855 kw and measures approximately 120 ft. long and 15 ft. wide. The smaller furnace is rated 1200 kw and is approximately 85 ft. long and 15 ft. wide.

Ferro furnace school announced for early June

The second edition of the "Ferro Furnace School" will be held on June 7 and 8, 1949, according to a report from Ferro Enamel Corporation, sponsors of the school. According to the announcement, the school bell will ring at 9 a.m. on June 7th in the Grand Ballroom of the Hotel Carter, Cleveland. At the date of the report, sixty-seven persons had signed up to attend.

Twelve specific items are included in the announced program, as follows: maintenance costs, methods to minimize maintenance costs, combustion and controls, instrumentation, temperature gradients, fuel saving devices, furnace improvements, recuperators, drying of enameled ware, mill room maintenance, spray booth maintenance, and pickle room maintenance.

Detroit Vapor re-enters electric range field

Detroit Vapor Stove Co. is re-entering the electric range field, according to an announcement made by E. R. Bridge, sales manager.

The new line, the firm's first electric range line since 1939, will be shown formally for the first time at the Summer Homefurnishings Market next month, in Chicago, in Detroit Vapor's new permanent space in the American Furniture Mart.

"D.V.S. has decided to re-enter the electric range field," according to Bridge, "to help our dealers meet the increasing preference for electric ranges in some markets and because of the rapid expansion of rural electrification in many sections of the country." The line consists of two full-size 38-inch models and one 20-inch apartment size model. One full-size model is automatic.

"GRINDING COSTS REDUCED-

with LOCKE BRICKS and BALLS"

SAVINGS UP TO 25% on grinding operations is a familiar story to enamelers who standardize on Locke's new, improved Bricks and Balls. Try them. Chances are you'll see marked improvement in your grinding operations . . . for three reasons:

1. FASTER GRINDING—Locke Grinding Balls are handmade. This gives them a quick-acting irregular surface and a compact body that resists wear—keeps balls heavier, longer.
2. LONGER LIFE—Locke Bricks and Balls are more resistant to abrasion and breakage because they're completely vitrified—have no laminations or voids.
3. LESS CONTAMINATION—Made of special wet-process porcelain (originated by Locke in 1893), Locke Bricks and Balls are pure white and non-porous . . . do not require costly hand scrubbing . . . wash easily with a simple hosing.

Next time you need bricks and balls, specify Locke. Available for all standard mills.

LOCKE INCORPORATED

MEMBER: PORCELAIN ENAMEL INSTITUTE BALTIMORE • MARYLAND

LOCKE BRICKS and BALLS

BETTER MADE...because they're backed by Locke's 55 years experience with wet process porcelain PLUS the product control and development facilities of the new Fred M. Locke Research Laboratory, one of the world's finest and largest!

Albert H. Clem has been appointed assistant manager of sales of the Special Chemicals Division, Pennsylvania Salt Manufacturing Co., according to announcement by William P. Drake, vice president in charge of sales.

Clem, who has been field sales supervisor of the division, also will assume the duties performed by Philip C. Staples, Jr., as product supervisor on cleaners. Staples has been transferred to the company's Heavy Chemicals Division as a product supervisor.

Chicago Vit presents service awards

Roger L. Fellows, assistant director of research, and Raymond R. Brown, auditor, recently completed 25 years service each as members of the Chicago Vitreous Enamel Product Company organization. The event was signalized by a "quarter-century" banquet held in their honor. Part of the banquet ceremonies included the presentation of engraved watches.

Fellows joined Chicago Vit as its first ceramic engineer after he was graduated from the University of Illinois in 1924. He spent his early years with the company in gaining actual production experience. The company's Experimental Department was established under his guidance for development of new enamels and improved production techniques.

Brown joined Chicago Vit in 1924 as assistant bookkeeper. Several years later he was made head of the bookkeeping department and subsequently was promoted to auditor, which position he still holds in addition to supervising all of the bookkeeping activities for the firm.

Pictured at the presentation ceremonies are, left to right: Wm. Hogenson, president; R. L. Fellows; R. R. Brown; and E. Hogenson, executive vice president.

New product development appointments at American Cyanamid

The new product development department of American Cyanamid Company has announced the appointments of Dr. James R. Dudley, as supervisor of new product development, and John D. McPherson, as supervisor of market research activities.

Dr. Dudley joined American Cyanamid in 1940 as research chemist in the firm's Stamford Research Laboratories. He has been primarily concerned with organic nitrogen compounds and with synthetic resins, and his publications and patents have been principally devoted to amino and ion exchange resins.

McPherson joined the firm in 1945, following his release from the Chemical Warfare Service of the Army. During the war he was chief of the Production Division of the Army Chemical Center and was chief of the Arsenal Operations Department, Edgewood Arsenal, Md.

Binks elects officers

At their annual meeting in Chicago, April 16, directors of Binks Manufacturing Company elected J. F. Roche as chairman of the board. He is succeeded in the presidency by his son, Burke B. Roche.

The Binks organization was founded more than half a century ago by the late Joseph Binks, who perfected a successful paint spray gun and other widely used inventions.

Koppers board chairman retires

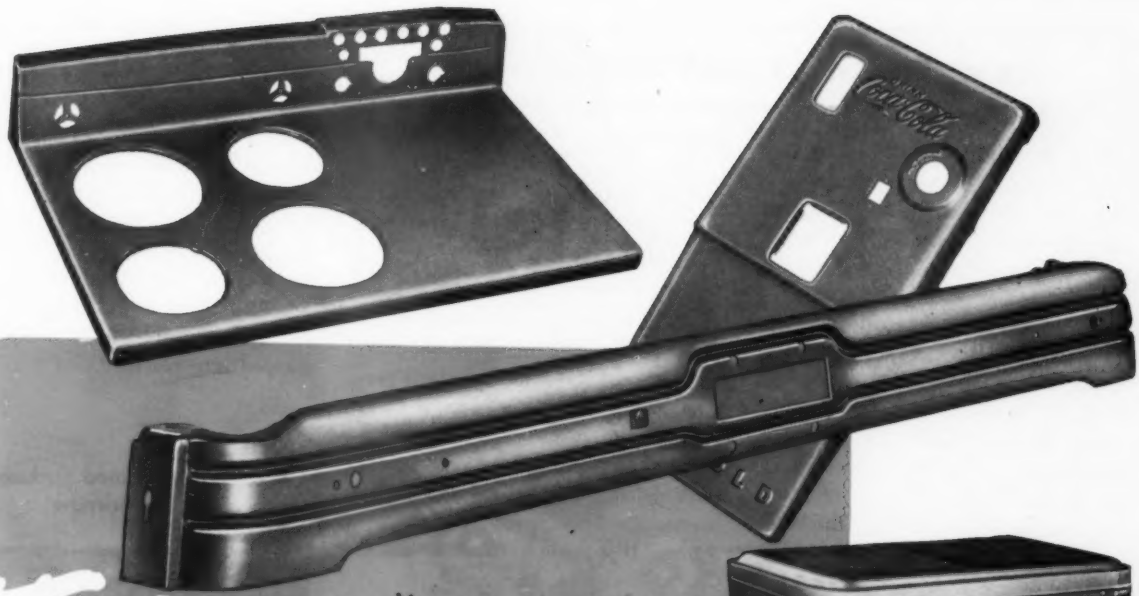
Retirement of J. P. Williams, Jr., chairman of the board of directors of Koppers Company, Inc., from the active management of the company, has been announced by the company. Williams had been actively associated with the firm, or its predecessors, since 1920.

Sears promotes Fetzer

Sears, Roebuck and Co. recently announced the appointment of Rodger E. Fetzer to direct hard lines merchandising in the national merchandising office in Chicago.

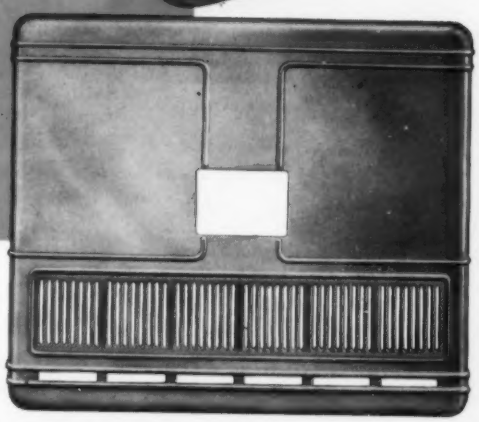
Fetzer has been serving as retail sales manager of the stove buying department since going with Sears five years ago. Previously, he was sales manager of the Newark Stove Company, of Newark, Ohio, from 1939 to 1944. From 1929 to 1938, he was sales promotion manager of

to Page 66 →



Tooling by ADVANCE*

makes the processing of parts such as these fast and simple



• Advance Tooling Methods and techniques have proved to be outstanding, efficient and economical . . . for progressive manufacturers in all lines where sheet metal stampings are a major part of production costs.

• Wide experience, engineering skill and most complete facilities are available at Advance for your die and tool requirements. Thorough try-out of all stamping dies on our own modern presses eliminates die troubles in your plant.

Your Inquiry or Consultation Invited

***Write* FOR BULLETIN**
which illustrates and describes Advance methods and facilities.

**Specialists in complicated dies — largest or smallest — for difficult parts*

ADVANCE DIE & TOOL CO.
6800 MADISON AVENUE
CLEVELAND 2, OHIO
PHONE: WOodbine 9191

New Supplies and Equipment

F-21. New paint and air heater

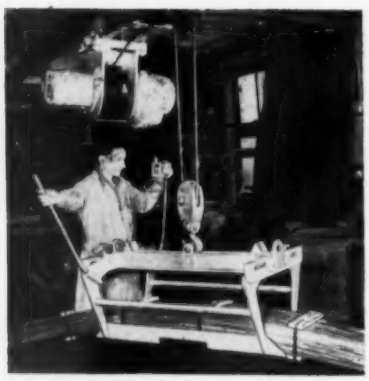
A paint and air heater of new design and construction has recently been listed and approved by Underwriters' Laboratories.

One of the features of the new heater, made by Bede Products, Inc., is that no water or heat transfer liquid is necessary, since aluminum is used as the heat transfer agent between the two 1000-watt cartridge type heaters, paint heating coils, and air heating coils. A layer of glass wool insulation surrounding the heating unit prevents loss, and a sturdy sheet steel outer shell provides protection against damage.

More Information

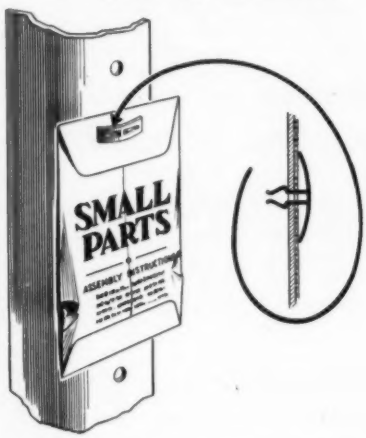
For more information on new supplies and equipment reviewed here, fill out the order form on this page.

F-22. Materials handling unit for plants with low headroom



This fulcrum action "sheet or bundle grab" is adjustable from 12 to 42 inches and carries a stack up to 10", providing a safe, efficient, low-cost method of handling sheet metal or bundled material on overhead hoists. The wide angle jaws permit clearance of cross members on skids. Thus, steel or other sheet material can be stacked within 5" of hoist hook, and close together for savings in floor space. Capacity is 3 tons. It is made by Rada Products Co.

F-23. "Speed Clip" attachment



Manufacturers of metal products shipped as knocked-down assemblies may create sizable savings through use of a "Speed Clip" to attach paper envelopes of fasteners and small parts to the assemblies for shipping, according to the manufacturer, Tinnerman Products, Inc.

It is recommended to makers of appliances, steel shelving, kitchen cabinets, steel furniture and other metal products. With the new system, the fasteners are placed in a sturdy paper envelope, and the envelope is attached to the assembly with a "Speed Clip" which is quickly snapped into place.

F-24. Self contained packaged plating machine

The "Cro-Plater", a unique new plating machine, is a complete plating unit, fully wired and ready for operation on delivery. This new machine is designed primarily for all types of chromium plating. It is provided with a lead-lined Armco iron tank. It can deliver any required amperage up to 300 amps under precision control not only of current, but of temperature. Made by W. S. Rockwell Co., the unit is equipped with a blower which not only exhausts the fumes from the tank, but force-cools the copper oxide rectifiers.

F-25. Rotary wire wheel brush

A completely new rotary wire wheel brush, with bristles imbedded or locked in rubber centers, has been announced by Hewitt-Robins, Inc. The brush is available in six, eight and ten-inch industrial sizes.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____ No._____ No._____ No._____

No._____ No._____ No._____ No._____

Name _____ Title _____

Company _____

Company Address _____

City _____ Zone____ State _____

"NOW ALL YOU NEED, BUD, IS A LITTLE EXPERIENCE"

But the duckling will have to get his experience the *hard* way. He can't buy it.

You *can* buy experience—*our* experience in making and using frit for more than 32 years. Notice we say "making and using." Not only have we learned the most advanced manufacturing techniques and laboratory tests, but we also use PORCELFRIT right here in our own enameling department, under the same conditions that apply in *your* plant. Thus we know PORCELFRIT works before you get it.

Don't try to learn by your own experience alone. Add what you know to what we know—add your methods to plant-tested PORCELFRIT and get the finest *results.*

ING-RICH
PORCELFRIT
"The Plant Tested Frit"

INGRAM-RICHARDSON MFG. CO., OF INDIANA, INC.
OFFICES, LABORATORY AND PLANT, FRANKFORT, INDIANA

→ *from Page 62*

the Roberts & Mander Stove Co. of Philadelphia.

Whittemore presented with testimonial gift

Virginia Tech alumni and students of Ceramic Engineering talked over old times together at their annual dinner held at the Hotel Metropole, Cincinnati, Ohio, during the 51st annual meeting of the American Ceramic Society. Forty-five were in attendance.

V. V. Kelsey, president of Dominion Minerals, Inc., alumnus of V.P.I., and a past-president of the American Ceramic Society, very cleverly presented his after-dinner talk to work up to the climactic high-spot of the occasion, the presentation of a testimonial gift to Associate Dean John W. Whittemore, Head of the Department of Ceramic Engineering at Virginia Polytechnic Institute, and retiring president of the American Ceramic Society. The gift, a sterling silver service with tray, bore the inscription: "To John W. Whittemore from his present and former students for his friendship, fellowship and service."

Floyd-Wells uses demonstration truck as sales tool

A "showcase-on-wheels" is a demonstrator truck for Bengal ranges, recently introduced to the Maine, New Hampshire and Vermont territory by David Reid, district representative for Floyd-Wells Company, who is shown with the truck. The latest model Bengal combination range, visible through window in side panel of truck, is connected for use with oil and bottled gas for on-the-spot demonstrations.

This  ...may be just the cleaner you need

OAKITE Composition No. 97 is a new emulsifiable solvent cleaner that dilutes with water for use in spray-washing machines.

Oakite Composition No. 97 removes buffing compounds, drawing and stamping compounds, cutting and grinding lubricants, rust preventives, metal chips and other dirt from steel, cast iron, brass, aluminum and zinc.

FREE If you need faster, better cleaning *plus temporary rust prevention* between machining operations . . . or faster, better precleaning before prepaint or electrocleaning operations . . . write to Oakite Products, Inc., 17 Thames St., New York 6, N. Y., for more information about Oakite Composition No. 97.

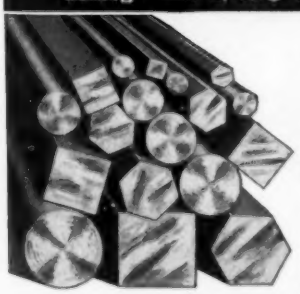
OAKITE 1909 1949 40th ANNIVERSARY YEAR

OAKITE
REG. U. S. PAT. OFF.
INDUSTRIAL CLEANING MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in Principal Cities of United States and Canada

It's **MISCO** for HEAT RESISTING ALLOYS IN ROLLED MILL FORMS

Sheets — Plates — Rounds ● Squares ■ Hexagons ● Flats — Angles L
Channels U Sections ⌐ Pipe ○ Nuts ⬡ Welding Rod



Specify MISCO METAL for your Enameling Racks and Fixtures used at High Temperatures.

Select THE ALLOY THAT DOES YOUR JOB BEST

MISCO METAL—
36 Nickel—16 Chromium—*Type 330*

MISCO K—
25 Chromium—20 Nickel—*Type 310*

MISCO B—
23 Chromium—14 Nickel—*Type 309*

200 items of Rolled Mill Forms carried in stock for prompt shipment. Send for Stock List.

ROLLED PRODUCTS DIVISION
Michigan Steel Casting Company
1999 GUOIN ST. • DETROIT 7, MICH.
MISCO
One of the World's Pioneer Producers and Distributors of Heat and Corrosion Resisting Alloys

Joseph Horton Fall, Jr., dies

It is with regret that we announce the passing of Joseph Horton Fall, Jr., on May 12, at his home in Evanston, following a long illness. He was seventy-three.

Until his retirement in 1944 he was chairman of the board and treasurer of Benjamin Electric Manufacturing Company, Des Plaines, Illinois, and formerly was president of Royal Enameling and Mfg. Company until it was consolidated with Benjamin Electric in 1918.

Patterson Foundry appointment

Everett S. Bissell has been appointed vice president in charge of sales, research laboratories, chemical engineering and process engineering for The Patterson Foundry & Machine Co., East Liverpool, Ohio, according to an announcement by Richard L. Cawood, president. Bissell formerly was vice president and general manager of Mixing Equipment Co., Rochester, N. Y.

Announcement has been received that William Richard Coffeen arrived at the home of Mr. and Mrs. W. W. Coffeen on April 1, 1949 — weight 9 lbs. 3½ oz. Mr. Coffeen is a ceramic engineer with Metal & Thermit Corporation.

Sears features new type wringer

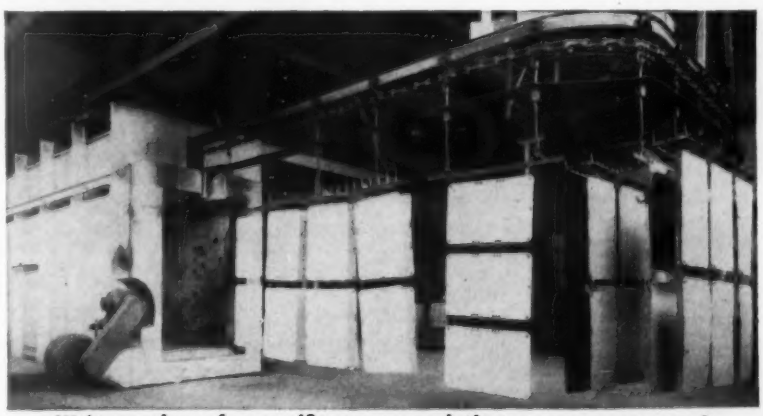
A newly-developed open-top wringer with three-inch balloon rolls that

to Page 71 →

Webb Conveyorized production is "paced" production —it moves with a steady, even rhythm that gets results in high volume at low cost, and supplies the *right* parts to the *right* place at the *right* time.

Bottlenecks are avoided . . . piling up of parts is eliminated . . . idleness of machinery from failure of material supply is done away with. Webb Conveyors provide a means to organize production into an orderly, continuous flow, and to provide live storage where needed.

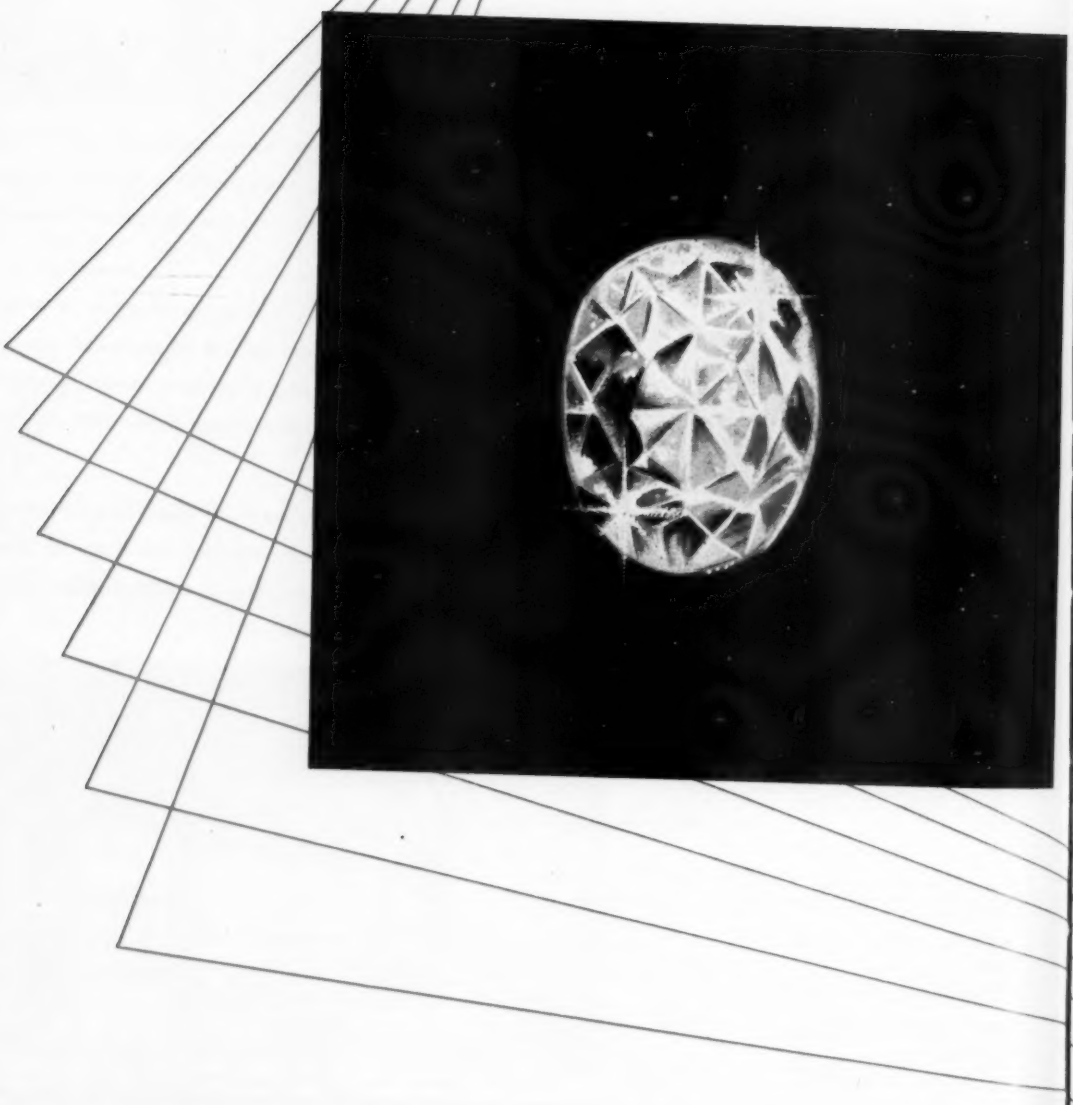
For three decades, Webb has been providing conveyors for the most exacting production in industry. We have an organization which knows its job—knows how to select, design and build the right conveyors for your job. *2892



Write or phone for specific recommendations on your own needs.

JERVIS B. WEBB COMPANY
Conveyor Engineers and Manufacturers
8951 ALPINE AVENUE • DETROIT 4, MICHIGAN
Offices in Principal Cities

COLOR



STABILITY

IS IMPORTANT---AND IT'S A 1400°-50° NEOWITE ADVANTAGE

Before a pound of 1400°-50° "NEOWITE" ever was sold stability of color was definitely established by both field and laboratory tests. This is but one of the characteristics contributing to the superiority of this unusual finish. Not only does 1400°-50° "NEOWITE" retain its color over one temperature but it can be depended on to remain a stable white over a wide firing range and on refire.

Performance of this sort naturally contributes to production *economy which is still further emphasized by a remarkable reduction in warpage and scrap.*

PEMCO'S 1400°-50° "NEOWITE" is not a "prima donna"—1400°-50° "NEOWITE" does not have to be coddled, for in addition to its low temperature advantages, it also possesses ALL the splendid characteristics of regular "NEOWITE", including one fire, alone or with Pemco's NEW 1400°-50° GROUND COAT. Nor is its application restricted to a particular finishing problem. PEMCO'S 1400°-50° "NEOWITE" is a GENERAL ALL PURPOSE enamel.

ADHERENCE—1400°-50° GROUND COAT—1400°-50° "NEOWITE"—Starting with the ground coat we have yet to see a porcelain enamel finish with better adherence than either one of these new products. They are the tops.

CONTROLLED UNIFORMITY—A pound or a carload! Today—tomorrow—next month—it doesn't matter what the size of your order nor when it is to be delivered, every ounce will be the same UNIFORM quality . . . will give the same uniform performance . . . with the same high reflectance at low application weights, comparable to all Pemco continuous smelted frit.

Why not check on 1400°-50° NEOWITE today. Request samples for a production run . . . and you too will be convinced that 1400°-50° is sure a "winner."

PEMCO CORPORATION

Baltimore 24, Maryland

Always Begin With a Good Finish

New industrial literature

601. Flexible hose catalog

A new catalog section on a line of hydraulic control hose has been published by The B. F. Goodrich Co., and is now available upon request.

The catalog section lists many of the recommended uses for this type hose, made with special wire braid to give greater toughness and flexibility. The hose is made for working pressures ranging from 300 to 5000 pounds per square inch, depending on size and construction.

A method of calculating correct bending radii for various hose sizes and illustrations of reattachable couplings are among other features of the section.

More Information
For more information on new industrial literature reviewed here, fill out the order form on page 64.

---

602. Case histories on packaging

The case histories in Issue No. 23 of Acme Process News may suggest an answer to packaging problems existing in industrial plants. Contained in these case histories are factual accounts of the savings that have been realized in packaging departments through the use of Acme Steelstrap and Silverstitchers.

---

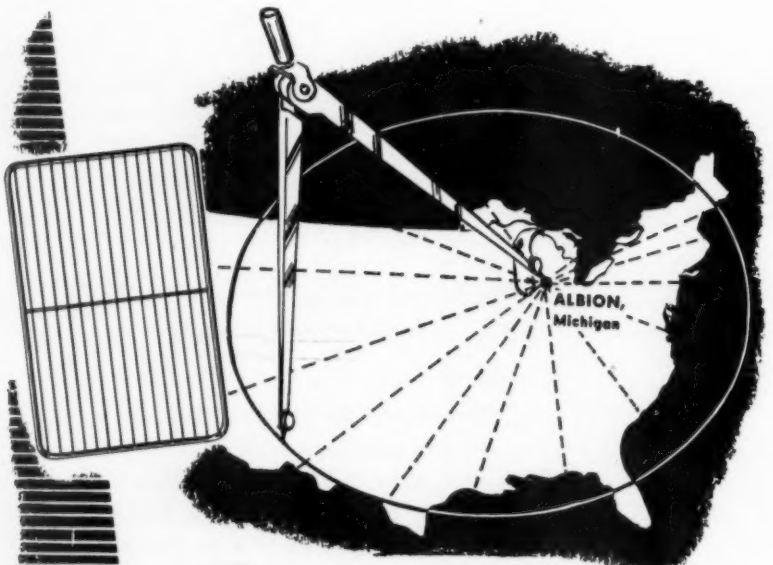
603. Certified combustion bulletin

A new bulletin on certified combustion has been published by North American Mfg. Co. In the Bulletin, No. 58, it is stated that exact air-to-gas ratios can be set by means of a pointer and dial arrangement on the burner. No further manipulating of valves or adjustments is needed. This means positive initial light-up regardless of the numbers of burners involved. The bulletin contains a table of maximum capacity in thousands of Btu per hour for different burners.

---

604. Folder on expansion joints

A new illustrated bulletin in two colors was prepared by Chicago Metal Hose Corp. to present engineering and product information to operating and engineering personnel in industrial fields dealing with piping where pressure and temperature extremes exist, and where pipeline expansion under working conditions is a prime consideration. Information contained covers both "Free-Flexing" and "Controlled-Flexing" corrugated type expansion joints in copper and stainless steel construction. Copies of this bulletin are available to persons who have a direct interest in expansion joints and who indicate their company affiliation and title or function.



Shelving Center **U.S.A.**

The location of your shelving supplier is mighty important to you if you're to get "On time" deliveries at lowest cost transportation rates.

That's why Union Steel's central location in the midwest makes it the Shelving Center of the U.S.A. Major railroads, fast trucking facilities, super-rush air shipments, or nearby low cost water transportation are available at Albion's doorstep.

Let USP engineers and designers help you with your shelving problems. Enjoy the high quality, modern design "on time", low cost delivery of Union Steel shelving. Buy from Union Steel, Albion, Michigan . . . Shelving Center—U.S.A.!

USP
UNION STEEL PRODUCTS COMPANY
WIRE PRODUCTS DIVISION • ALBION, MICHIGAN

→ *from Page 67*

adjust pressure automatically is featured by two new washers recently introduced nationally by Sears, Roebuck and Co. in its retail stores.

Named "Visi-matic" because the entire wringing action is visable, the wringer incorporates several innovations designed to provide more efficient and safer operation.

Manufactured by the Nineteen Hundred Corporation, the Visa-matic wringer appears on the standard and semi-automatic models. Both wash up to nine pounds in their over-size tubs.

The semi-automatic washer is equipped with an automatic timer that signals any washing operation up to 20 minutes and automatically shuts off the washer. Another feature is the double-wall tub construction, which acts as an insulator to retain heat in the water.

Goss appointed manager of GE Control divisions engineering

The appointment of James H. Goss as manager of engineering in the Control Division of General Electric's Apparatus Department has been announced by K. R. Van Tassel, manager of the division. Goss has been with General Electric since 1931.

Steel plumbing fixtures bring modern bathrooms to more farm homes

Weighing approximately one-third as much as old-style plumbing fixtures, porcelain enameled steel bathroom fixtures can be installed in any farm home without concern for existing floor construction.

Many farm homes which were built ten or more years ago, when less than 20% of all farm dwellings had running water, were not constructed to accommodate the concentrated dead weight of cumbersome old-style bathroom fixtures. A porcelain enameled steel bathtub weighs approximately one-third as much as old fashioned bathtubs.

In addition to their weight advantage, porcelain enameled steel plumbing fixtures provide several other worthwhile features. The porcelain enamel of all steel plumbing fixtures is of a special stainproof quality, originally developed to withstand acids in scientific equipment. It will not become dull, pitted and hard to clean.

Summer furniture market in Chicago, July 5-16

The international summer homefurnishings market will be held from July 5 through 16, in Chicago, at the American Furniture Mart and The Merchandise Mart.

Grover J. Meyer has been named president and director of The Lombard Corp., Youngstown, Ohio, designers and manufacturers of hydraulic equipment, according to a report. Previously, he was president and general manager of Renner Co.

More news . . . Page 74

SPARKLER
horizontal plate
FILTERS

Good Plating Requires Clean Plating Solutions

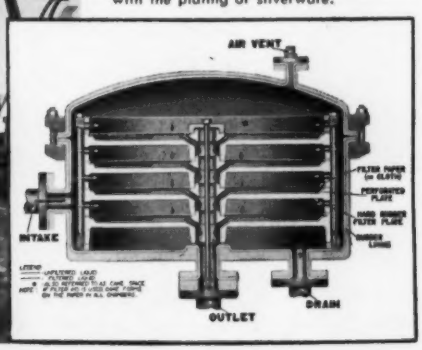
Sparkler Horizontal Plate Filters effectively remove all solids and precipitates from plating solutions—provide positive assurance that solutions are free from undesirable matter.

The horizontal plate principle used by Sparkler makes possible the formation of firm, stable filter cakes that will not slip or crack under intermittent or continuous flow. Flow through the filter is always *with* gravity, and filter aid is floated into position, forming a firm cake of even thickness.

The accompanying photograph shows a typical Sparkler installation in a modern plating plant. Previously, in this plant, silver chloride slurry was shoveled into crocks and laboriously washed by decantation. Now, chloride is mechanically agitated, collected, and washed in the Sparkler filter. Cost of the operation has been sharply reduced and quality of the chloride has been greatly improved.

Filters are pressure-tight and leakproof, and are available in rubber-lined construction, stainless steel, or iron. Capacities from 60 to 10,000 G.P.H.

Our Engineering Service is available for your specific problems.

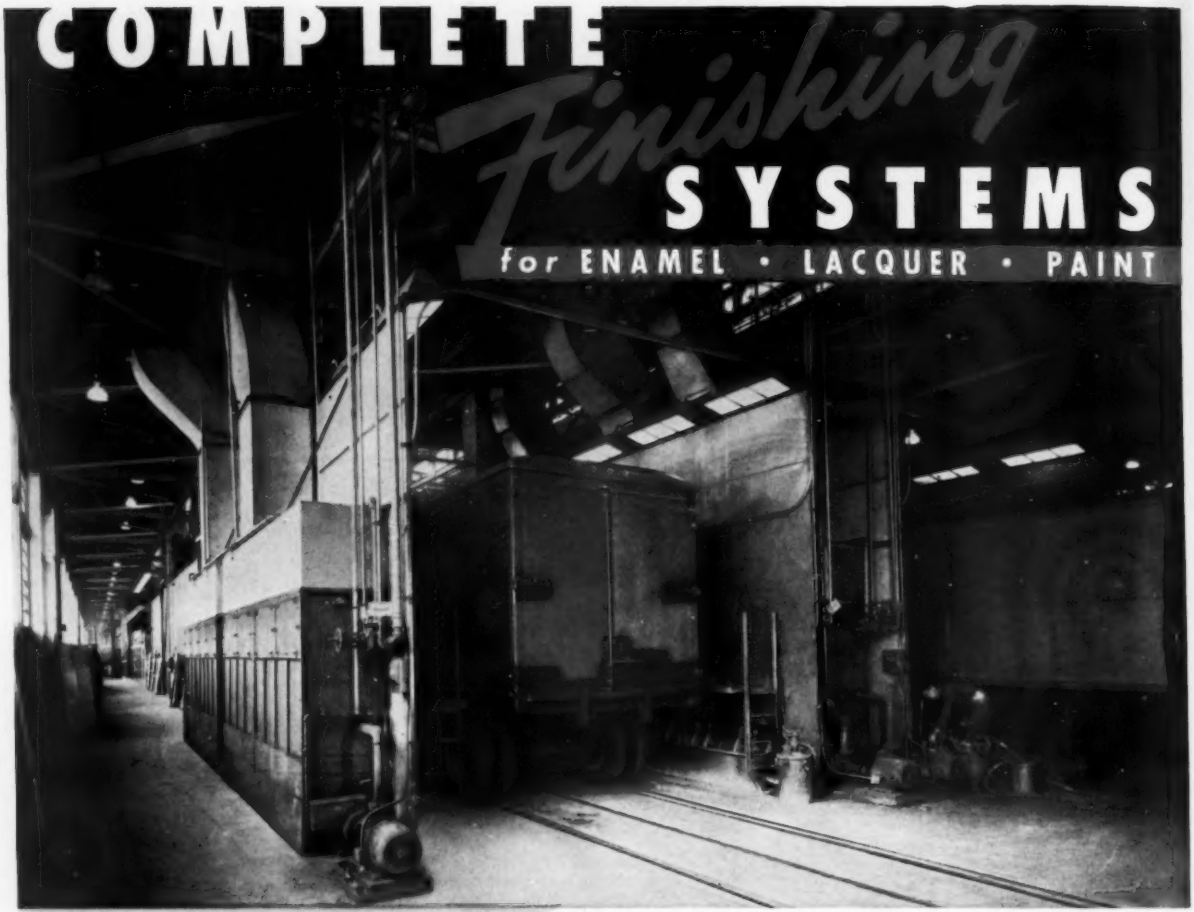


SPARKLER MANUFACTURING CO.
MUNDELEIN, ILLINOIS

This Sparkler Filter is used by a large silverware manufacturer in connection with the plating of silverware.

COMPLETE *Finishing* SYSTEMS

for ENAMEL • LACQUER • PAINT



Mahon Hydro-Filter Spray Booths in two finishing production lines. These booths, part of a Complete Finishing System installed at the Fruehauf Trailer Company's plant, Avon Lake, Ohio—are specially designed for painting Van Bodies of assembled Truck-Trailers.

More Mahon Hydro-Filter Spray Booths in the same installation—these spray booths are specially designed for applying finish coat to underside of Van Bodies and Chassis.

. . . a Capital Investment in Cost-Lowering Operating Efficiency!

You don't buy a finishing system every day . . . the capital outlay for such equipment will be reflected in your finishing costs and the sales curve of your product over a period of years. Your first concern in selecting finishing equipment should be performance . . . the operating efficiency of equipment of this type, which must be planned, engineered and produced to do YOUR particular finishing job, will be in direct proportion to the ability and the experience of the engineers entrusted with the job. Initial cost, therefore, is of secondary importance . . . your primary consideration is operating efficiency and cost per unit processed in every day operation. You cannot afford to place the responsibility for equipment which so directly affects the saleability of your product in the hands of other than those best qualified. Mahon engineers have pioneered development in this highly specialized field for twenty-eight years . . . their experience, which is world-wide in scope and covers virtually every industry where finishing is a major production operation, has endowed them with a wealth of technical knowledge and practical know-how not available to you elsewhere. See Sweet's Mech. Ind. File for complete information.

THE R. C. MAHON COMPANY

Home Office and plant, Detroit 11, Mich. • Western Sales Div., Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning and Rust Proofing Equipment, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Systems, Drying and Baking Ovens, and Paint Reclamation Units. Also, Core Ovens, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

MAHON

Program for third sales management conference presents top-ranking speakers on advertising and selling

THE program for the third Sales Management Conference of the Porcelain Enamel Institute offers an opportunity for the manufacturers of major appliances and allied metal products to hear management, sales management and advertising specialists present their best information on "how to sell" and many other features of importance to those who must better prepare their organizations for selling in the 1949 market. The program was developed and released by the Sales Management Conference Committee under the chairmanship of C. P. Lohman, Pemco Corporation, Baltimore, Md.

The Conference will be held on June 24, at Hotel Carter, Cleveland, Ohio, and is open to all those manufacturers of metal products for which porcelain enamel is used as a complete or component finish.

According to the Conference Committee, the entire program will be devoted to sales techniques and planning in today's home appliance buyers' market. Theme of the morning session of the conference will be "How to Sell," and will cover company sales organization, advertising, selling at the retail level, and product design for sales. The afternoon session will present "How to Use Porcelain Enamel as a Selling Tool," and will include discussions of major appliances, plumbing fixtures and other major products, evaluation of competitive finishes, and a demonstration of how porcelain enamel is made.

Merchandisers generally have been interested in Hotpoint's spectacular rise to one of the top three positions in the range market, in why steel plumbing fixtures have taken one-third of the total national plumbing-ware business in the brief ten years of their existence, in how women — who influence the purchase of nearly all household fixtures and appliances — shop for these furnishings, choose them, feel about them. Answers to these and other sales questions and merchandising problems close to the appliance field will be discussed at the meeting by marketing specialists.

When James J. Nance joined Hotpoint in 1947, he immediately launched a $25 million expansion program which has brought the company to a leading position in the electrical appliance field. He is one of few American top-management executives to come up through the ranks by way of marketing and distribution, and his story will be one of great interest to all manufacturers of porcelain enameled products..

Advertising will continue to gain in prominence as a necessary part of the sales picture in a competitive market. As an executive with one of the country's leading advertising agencies, Mr. Billingsley, of Fuller & Smith & Ross, should have a message of great importance.

There is an increasing realization among manufacturers that the key to effective selling and reduction of product inventories is in the hands of retail merchandise men. Personnel training has top importance in this picture, and will be laid before the Sales Management Conference by Lawrence Greenberger, of Kaufmann's Department Stores.

Product design is also getting an increasing amount of attention by manufacturers, and therefore makes the subject of W. J. Russell, of Landers, Frary & Clark, a pertinent one.

Few companies have done a better job of display and some phases of advertising and merchandising than has Briggs Manufacturing Company. Every manufacturer should learn something from the presentation of O. F. Depperman, of Briggs.

For those who manufacture finished products, there must be ultimate consideration of the consumer. Few would be in better position than Margaret Davidson, associate editor of *Ladies' Home Journal* and in charge of the *Journal's* Household Department, to present a picture of the true viewpoint of the woman shopper. It

PEI Sales Management Conference
June 24, Hotel Carter
Cleveland, Ohio

Program

Presiding — C. P. LOHMAN, Pemco Corporation

9:45 a.m.

C. D. Clawson, President, Porcelain Enamel Institute — "Objectives of the Sales Management Conference"

James J. Nance, President, Hotpoint, Inc., (subject to be selected)

A. Billingsley, Fuller & Smith & Ross, Inc. — "Advertising as a Tool for Selling"

Dr. Lawrence Greenberger, Director of Personnel Training, Kaufmann's Department Stores — "Selling your Products at the Retail Level"

W. J. Russell, Landers, Frary & Clark — "Designing for Sales in 1949"

12:00 a.m.

Luncheon — "Dr. Weatherspoon" (Jerry T. Ricketts)

2:00 p.m.

O. F. Depperman, Briggs Manufacturing Co. — "Glamourizing Porcelain Enamel"

Margaret Davidson, Ladies' Home Journal — "Never Underestimate the Power of a Woman"

D. H. Malcom, Armco Steel Corporation — "Beyond the Horizon"

(speaker to be selected) — "The Evaluation of Competitive Finishes"

Dr. M. J. Behnsen, Ferro Enamel Corporation — "Demonstration of Making Porcelain Enamel"

is believed that this discussion alone should be well worth a trip to Cleveland by top merchandising men.

In order to assist in "tying down" the meat of the day's discussions into a practical workable plan for assisting in the sale of major appliances and other porcelain enameled products, the closing feature of the program, under the direction of Dr. M. J. Bahnsen, of Ferro Enamel Corporation; D. H. Malcom, of Armco Steel Corporation; and others, should give everyone in attendance that pocketful of facts which will make it possible to immediately capitalize on the Sales Management Conference in their respective businesses.

NOTICE

A press date release reveals that Dr. G. H. Spencer-Strong, vice president in charge of research, Pemco Corporation, will discuss "The Evaluation of Competitive Finishes" before the afternoon session of the Sales Management Conference of the Porcelain Enamel Institute, June 24, at Carter Hotel, Cleveland, Ohio.

The Porcelain Enamel Institute, sponsors of the meeting, urges that all who would like to participate in this cooperative conference indicate as soon as possible their intention to attend, and the number who will be present from the company represented. A block of rooms is being reserved at Hotel Carter. All those planning to attend the Conference should write direct to the Hotel with specific mention of the PEI Conference. All activities will be held in the Carter's air conditioned Rainbow Room, and there will be no registration fee. The PEI urges that you write for your reservation now.

Industry news

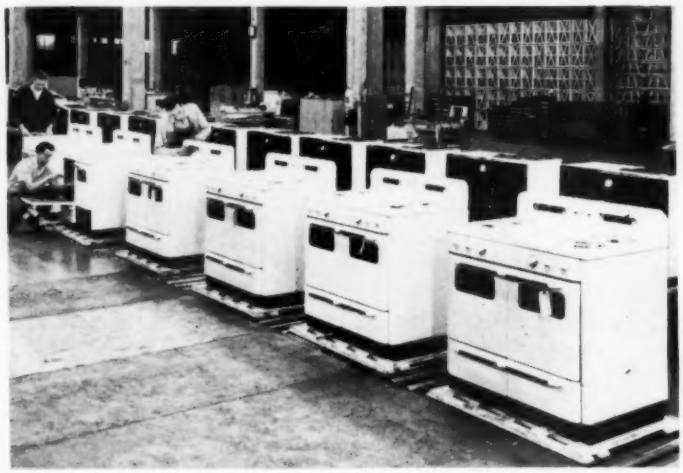
→ *from Page 71*

U. S. Business Management to confer in June on policy problems

Management of American business has been invited to a national conference in New York June 8 and 9 under the sponsorship of the American Management Association "to exchange thinking on key issues of overriding significance to those who must determine business policy at the top level," Lawrence A. Appley, AMA president, has announced.

The conference, open to all American business executives, has been called "to assist top management in the identification and solution of its problems by an interchange of thinking and experience." More than 400 company representatives from all sections of the country have already registered for the meeting AMA stated.

First gas ranges from Perfection's new plant



Perfection Stove Company's first gas ranges are seen coming off the assembly line at the firm's newly expanded Ivanhoe Road plant in Cleveland, Ohio. Manufacturers of kerosene ranges and cook stoves for the past 61 years, Perfection will also enter the electric range field this year.

Removal of gas items from export control

The Government took another step to stimulate export trade and aid general business activities when the Secretary of Commerce announced that approximately 500 items, covering a wide range of commodities, have been removed from export control.

Among the items released are gas, oil and coal cooking and heating equipment. These decontrolled items now can be shipped without a validated license to any destination in the world including the "R" countries (Europe and adjacent areas.)

Finishing and plating to be featured in symposiums in Milwaukee

Practical subjects on finishing and plating will be featured in symposiums and at a round table discussion during educational sessions at the annual convention of the American Electroplaters Society, to be held in Milwaukee, Wis., June 27-30, under the general chairmanship of William C. Geissman of the AES Milwaukee Branch. Hotel Schroeder will be convention headquarters.

Report on automatic gas water heater sales in 1948

A total of 1,343,079 automatic gas water heaters, with a manufacturers' value of $67,662,000 were sold during the year ending February, 1949, according to H. Leigh Whitelaw, managing director of the Gas Appliance Manufacturers Association.

According to reports from companies approximating 95 per cent of the industry, Whitelaw said, total shipments of automatic gas fired

VALVES FOR GAS by "DETROIT BRASS"

Assure MAXIMUM Efficiency and Economy

Valves determine, in large measure, the efficient operation of the appliance, the comfort resulting from use and the economy in operation.

● Your appliance demands a dependable valve—one that on past performance has proved itself a control to be relied on.

● Your appliance demands a trouble-free valve—one that doesn't talk back or call for attention but produces smoothly with endless satisfaction.

● Your appliance demands a valve made to high standards—to AGA specifications, as a guarantee of performance.

And when you use Detroit Brass valves you get all this and more!

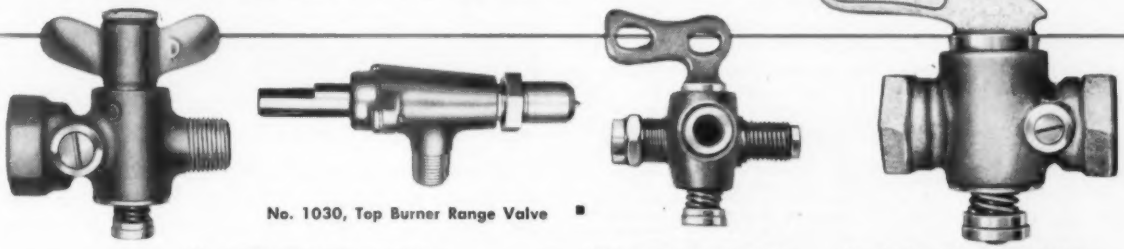
+ You get valves designed to perform for the life of your appliance.

+ You get valves engineered and produced out of more than fifty years experience in the development and manufacture of valves for gas.

+ You get valves stamped with the nationally-known "D", a symbol of pride in workmanship.

These are some of the reasons why so many successful companies depend on Detroit Brass for valves. Why not join them in realizing these advantages by doing business with us?

Gas Appliance Fittings produced by Detroit Brass & Malleable Works include a complete line of Valves for Gas Ranges, Water Heaters, Space Heaters, Gas-Fired Furnaces and Wall Heaters



No. 1030, Top Burner Range Valve

No. 1500, Water Heater Valve

No. 1400, Space Heater Valve

No. 2000, Main Shut-off Valve

DETROIT BRASS & MALLEABLE WORKS

DETROIT 9, MICHIGAN

heaters shipped during February, 1949, totalled 80,500 units, or 26.6 per cent less than February, 1948, but more than two and one-half times more than the average pre-war February shipments (1936-40).

U. of I. to graduate 14 ceramic engineers with advanced degrees

Fourteen of the thirty-five ceramic engineers doing graduate work will be graduated with advanced degrees by the University of Illinois, Department of Ceramic Engineering, during 1949, at February, June and October ceremonies. Of the fourteen theses prepared by these men, three are on enamels, seven on refractories, three on glass, and one in the whitewares field.

Edwin K. Jensen has just completed some work on 1300° F. enamels using titania as the opacifier in which various components of the composition were studied.

Robert F. Kimpel presented the results of his investigations of "Factors Influencing the Oxidation of Iron in the Firing of Ground Coat Enamels" in a paper (see page 50 for a resumé of the paper) presented before the Enamel Division of the American Ceramic Society.

Raymond C. Womeldorph is studying the melting behavior of ground coat enamels with special emphasis on bubble structure. A constant batch with variations in clays, thickness of application and metal stock are the basis of the work.

Eastern enamelers hear Philco executive

Cooperation among business firms, even competitors, is the fundamental reason why today's porcelain enameled products are superior to those of 25 years ago and yet cost less despite higher material, labor and overhead expenses, it was pointed out by W. Paul Jones, vice president—refrigeration division, Philco Corporation, in addressing a meeting of the Eastern District Enamelers Club at the Sylvania Hotel on Saturday, May 14.

Jones, noted as an inventor as well as an executive in the refrigeration industry, hailed the breakdown of the narrow selfishness and suspicion which impeded business progress until recent years. He described the numerous advances that cooperative development has made possible in the porcelain enameling field, and explained that most firms now license their competitors voluntarily as new ideas are perfected.

The history of porcelain enameling from its early rise in decorating jewelry to its present numerous industrial applications was briefly traced by Mr. Jones. He concluded his talk by pointing out some of the specific problems still confronting enamelers in their improvement of today's products.

Let The ARIDIFIER

CLEAN YOUR AIR AND GAS LINES

Removes 92% Oil, Water and Dirt

The Aridifier gives you positive removal of oil, moisture and other foreign matter from air or gas lines. With paints and lacquers it often eliminates bloom and imperfections in finish. It provides dry lines for ceramics, sand blasting, for air cleaning, etc. Wherever the need exists for *dry clean* air or gas, the Aridifier delivers the goods. Easily installed. No maintenance problem. 10 models available. Capacity range: As low as 7 CFM to 17,000 CFM.

BULLETIN 147 Tells The Complete Story

HOW IT WORKS — Exploded view shows how four multi blade rotors revolve at high speed in opposite directions under impact of air movement through non-aligned rotor spaces. Moisture, dirt and other foreign matter which collect on rotor blades are thrown out of air stream by centrifugal force to side of housing, and pass into drain.

Made By The Manufacturers of Logan Lathes and Shapers.

Logan ENGINEERING CO.

4029 W. LAWRENCE AVE., CHICAGO 30, ILL.

U. of I. ceramic engineers win intramural basketball trophy

Shown in the photo are seven members of a University of Illinois Department of Ceramic Engineering basketball team which won the Intramural League trophy. Front row, from left to right: James Davis, James Shapland, Sam Deal and Charles MacPherson. Back row: Ervin Schuetze, Kenneth Wilk and Howard Rapp. Members of the team not shown are Ralph Riggs, Neil Van Dyke, Norman Russell, Raymond Noel, and William J. Meid, instructor, who coached the team.

Wallace appointed to top T-K post

R. A. Weaver, board chairman of Ferro Enamel Corporation, has announced the appointment of George W. Wallace as executive vice president of Ferro's subsidiary, Tuttle & Kift, Inc. Wallace will retain the position of director and treasurer of Ferro, it was stated. In addition, he is director and secretary of Tuttle & Kift, director and secretary of Ferro Chemical Corporation, and a director of Ferro Enamels (Canada) Ltd. He will maintain offices in both Cleveland and Chicago.

AWIMA meeting at Mackinac Island July 14, 15 and 16

The dates for the semi-annual meeting of the American Washer and Ironer Manufacturers Association at Mackinac Island, Michigan, have been announced as July 14, 15 and 16. AWIMA headquarters have stated that reservations on the Special Train should be made before June 14.

Central enamelers elect officers

At the May 20th meeting of the Central District Enamelers Club, in Cleveland, the following new officers were elected: Paul Cecil, Strong Mfg., president; Albert Mallonn, Republic Stamping and Enameling, vice president and program chairman; James Schiefferle, General Electric, vice president; and M. Bozsin, Ferro Enamel, secretary-treasurer.

Store modernization show to feature complete full-sized modernized store

At the 3rd annual International Store Modernization Show, June 19 through June 24, at Grand Central Palace, New York City, manufacturers' exhibits will include a complete, full-sized modernized store, featuring many of the latest fixtures. Brought together under one roof will be the latest store equipment of all types, from display cases, lighting fixtures, and cash registers, to air conditioning, moving stairways, and store fronts.

let these

SPECIALIZED WYANDOTTE COMPOUNDS

help solve your metal cleaning problems

In the complete line of Wyandotte Metal Cleaners, you'll find a product designed to meet your particular needs.

Wyandotte Porenac, for example, is prepared especially for the removal of drawing lubricants prior to porcelain enameling, barrel plating or oxide finishing. Its concentration requirements are low – its life in solution extremely long. Porenac sharply reduces cleaning time because it eliminates the necessity for pre-cleaning. It emulsifies the toughest mineral oil compound quickly and at low cost.

Wyandotte W.L.G.* is excellent for cleaning parts in rotary washing machines between machining operations and before inspection, assembly and heat treating. It is also an efficient soak-tank cleaner. In the electro-cleaning of steels, W.L.G. can be used as pre-soak cleaner where a double cleaning cycle is available.

Wyandotte Chemicals Corporation, with its own sources of raw materials, makes the complete line of *specialized* metal cleaners. Whatever *your* cleaning needs may be, it will pay you to get in touch with your nearest Wyandotte Representative.

Wyandotte REG. U. S. PAT. OFF.

*Registered trade-mark

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • SERVICE REPRESENTATIVES IN 88 CITIES

Fabrication, metal preparation, enameling —sinks, bathtubs and washing machine tubs

(Continued from Page 23)

along the conveyor, it automatically spins so that the operator has access to the entire unit. Before the tub is transferred across the aisle to the No. 2 furnace line, it is cleaned with an automatic air blast.

No. 2 furnace is a double deck furnace, with 33′ preheat zone, 56′ firing zone and 43′ cooling zone. Ground coat is fired in the lower deck and cover coat in the top deck. Fired ground coat ware is taken off the furnace line at a process table for inspection. A mask is then placed over the bottom agitator and drain holes. OK'd ware is placed on another floor type revolving pallet conveyor which travels through the cover coat spray room. This pressurized spray room is designed to be washed down inside with water.

After travelling 600 feet, in four passes, through the lower deck of a dryer, at a temperature of 250° F., the ware passes through a brushing booth, which has an air blast for cleaning, and into the top deck of the No. 2 furnace. (All except one furnace in the enamel department use 800 Btu. gas. Furnace No. 1 uses oil.) Following inspection, the tubs are placed on a roller conveyor leading to the packaging and shipping department.

Enameling procedure for sanitary ware

As the bathtubs and sinks leave the lower deck of the pickle dryer, they are inspected before entering a pressurized spray room for the application of the ground coat enamel. From the spray room the conveyor carries the ware through an 80′ dryer with three passes. At the exit end of dryer, the sanitary ware is transferred to the chain for the No. 3 furnace which has a 16′ preheat zone, 56′ firing zone and a 16′ cooling zone. Tubs are suspended from coat hangers with two round hooks. Baffle plates are hung on the furnace conveyor between every 6 tubs.

Editor's Note:

Reference to a feature article in November, 1944 *finish*, describing the first continuous furnace tub plant at Ingersoll, will show the degree of expansion represented by this current article.

The *finish* editors are desirous of crediting Lawrence De Martini, general foreman of the Ingersoll press room; Carlton Fix, enamel department manager; Glenn Lynn, control foreman; Charles Leckie, industrial engineer; and other plant personnel for their technical help in connection with the plant visits and photography required for this article and the "photo story" to appear in July.

Following firing of the ground coat, the ware is taken from the furnace chain at the process table where inspection is made. OK'd ware is then hung on a conveyor leading to the cover coat spray room for the application of the first coat of acid-resisting enamel. The conveyor line carries the ware on through the lower deck of a 120′ dryer, with three passes, and to a brushing station which has a down draft exhaust system for collecting excess enamel dust.

After brushing, sanitary ware is transferred to the No. 4 furnace chain which carries the ware through a 33′ preheat zone, 56′ firing zone and a 43′ cooling zone, then to the process table. (No. 4 furnace is also a double deck furnace for both sanitary ware and washing machine tubs.) OK'd ware goes back to another pressurized spray room for the application of the final cover coat of acid-resisting enamel, then it carried through the upper deck of the 120′ dryer, back to a brushing station. Then it is transferred again to the No. 4 furnace chain. (In the No. 4 continuous furnace, both first and second coats of acid-resisting enamel are fired together.)

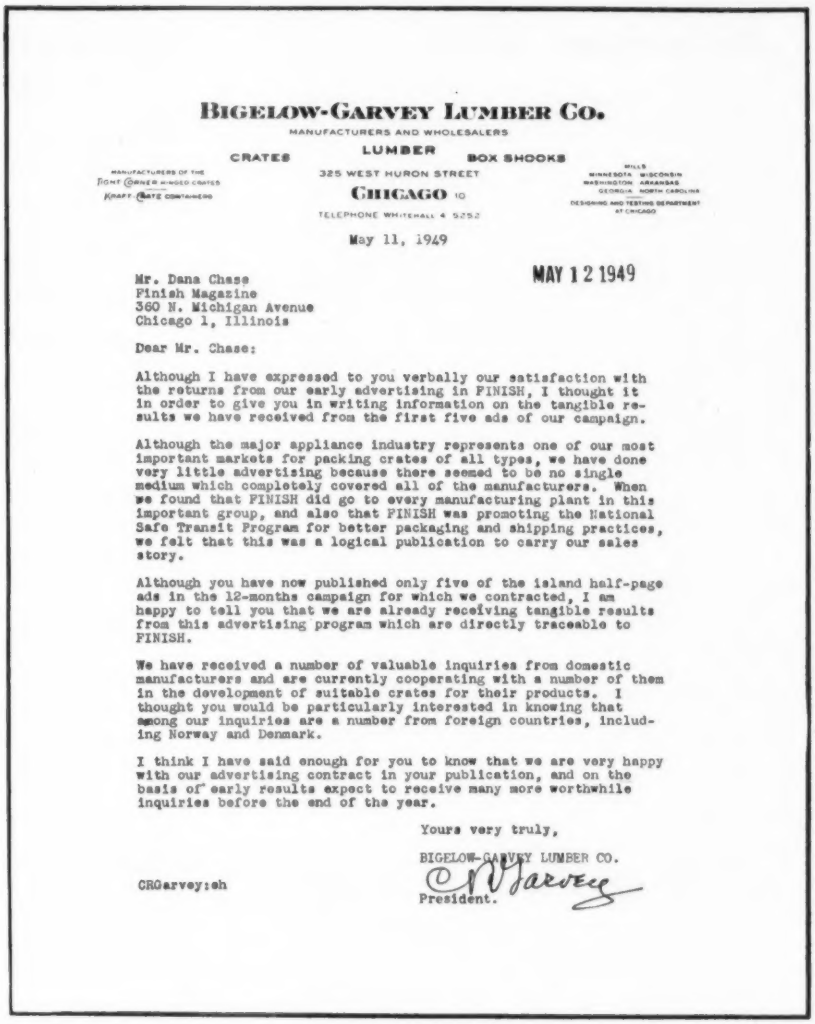
Finished sanitary ware is conveyed to the packaging area, placed in prebuilt knock-down type wood crates with the bottom side open. In the crate the tub is floated on an excelsior pad. As the crated ware passes through a booth on a roller conveyor, an operator sprays a sound deadening material to the complete exterior of the tub, including the reverse side of the apron. While still on the conveyor, the back of the crate is attached and steel strapping applied. A 100′ conveyor carries crated sinks and bathtubs through a tunnel under a railroad spur within the building to the loading platform.

The present plant is capable of firing 63,500 lbs. per hour. In terms of finished porcelain enameled products, this would be approximately 22,000 lbs. per hour.

Pickle Room Cycle

	Type	Temp.	Time	Concentration	Remarks
Cleaner	Alkaline		10 min.	8 oz./gal.	Two tanks used with 6000-gal. cap. each
Rinse		180°			
Rinse		Cold			
Acid	Sulphuric	150-160°	8 min.	8-10%	Two tanks
Rinse		Cold			
Bath	Nickel Sulphate	130-140°	3½ min.	½ oz./gal.	pH 3 to 4
Rinse		Cold			
Neutralizer	Sodium Cyanide	160-170°	1½ Min.	.3 oz./gal.	
Neutralizer	3 Parts Soda 1 Part Borax	180° to boil	1½ Min.	.10 to .15% NA_2O	

A full report on Cuban nickel production, financed by the U.S. Government during the war to alleviate the nickel shortage, is now available to the public, the Office of Technical Services of the Department of Commerce has announced.



BIGELOW-GARVEY LUMBER CO.

MANUFACTURERS AND WHOLESALERS

CRATES LUMBER BOX SHOOKS

MANUFACTURERS OF THE FIGHT CORNER HINGED CRATES KRAFT GATE CONTAINERS

325 WEST HURON STREET
CHICAGO 10
TELEPHONE WHITEHALL 4 9252

MILLS MINNESOTA WISCONSIN WASHINGTON ARKANSAS GEORGIA NORTH CAROLINA
DESIGNING AND TESTING DEPARTMENT AT CHICAGO

May 11, 1949

MAY 12 1949

Mr. Dana Chase
Finish Magazine
360 N. Michigan Avenue
Chicago 1, Illinois

Dear Mr. Chase:

Although I have expressed to you verbally our satisfaction with the returns from our early advertising in FINISH, I thought it in order to give you in writing information on the tangible results we have received from the first five ads of our campaign.

Although the major appliance industry represents one of our most important markets for packing crates of all types, we have done very little advertising because there seemed to be no single medium which completely covered all of the manufacturers. When we found that FINISH did go to every manufacturing plant in this important group, and also that FINISH was promoting the National Safe Transit Program for better packaging and shipping practices, we felt that this was a logical publication to carry our sales story.

Although you have now published only five of the island half-page ads in the 12-months campaign for which we contracted, I am happy to tell you that we are already receiving tangible results from this advertising program which are directly traceable to FINISH.

We have received a number of valuable inquiries from domestic manufacturers and are currently cooperating with a number of them in the development of suitable crates for their products. I thought you would be particularly interested in knowing that among our inquiries are a number from foreign countries, including Norway and Denmark.

I think I have said enough for you to know that we are very happy with our advertising contract in your publication, and on the basis of early results expect to receive many more worthwhile inquiries before the end of the year.

Yours very truly,

BIGELOW-GARVEY LUMBER CO.

CRGarvey:eh

C R Garvey
President.

Thank you Mr. Garvey . . . When the first five ads of a twelve-month campaign bring "tangible results" for a new advertiser, both in this country and abroad, we believe the publication in which these ads appeared should be considered by all who supply the industries covered . . . The continued interest, loyalty and responsiveness of *finish* readers produce results from advertising and make possible the continuing enlargement of editorial services . . . The "tangible results" from advertising keep *finish* growing. . . For rates and mechanical requirements, write to 360 North Michigan Avenue, Chicago 1, Illinois, or phone CEntral 6-1229.

THE ONLY INDUSTRIAL TRADE PUBLICATION COMPLETELY BLANKETING THE MAJOR APPLIANCE and ALLIED METAL PRODUCTS INDUSTRIES

finish